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NATIONAL DAM SAFETY PROGRAM. GOOSE CREEK LAKE DAM (MO 30297), M--ETC(U)
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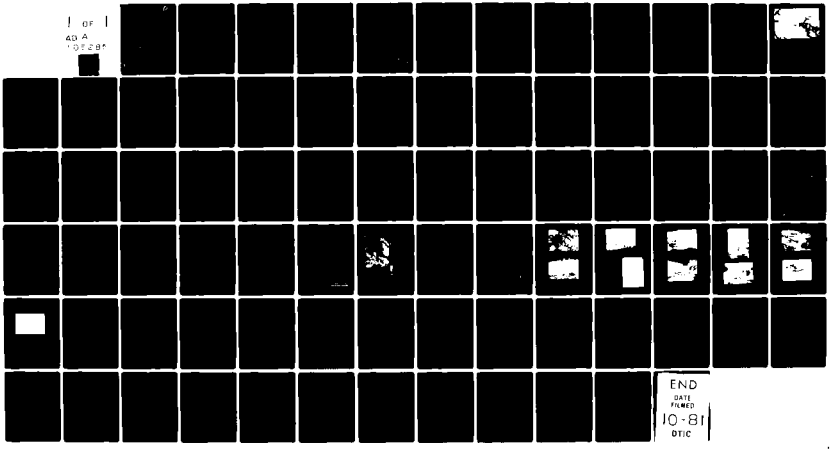

LEVEL II

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MISSISSIPPI-KASKASKIA-ST. LOUIS BASIN

AD A105285

GOOSE CREEK LAKE DAM
ST. FRANCOIS COUNTY, MISSOURI
MO 30297

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY INSPECTION

United States Army
Corps of Engineers
...Serving the Army
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St. Louis District

PREPARED BY: U.S. ARMY ENGINEER DISTRICT, ST. LOUIS

FOR: STATE OF MISSOURI

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1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A105 285
	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Dam Inspection Report National Dam Safety Program Goose Creek Lake Dam (MO 30297) St. Francois County, Missouri	5. TYPE OF REPORT & PERIOD COVERED Final Report
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Woodward-Clyde Consultants	8. CONTRACT OR GRANT NUMBER(s) DACW43-81-C-0039
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army Engineer District, St. Louis Dam Inventory and Inspection Section, LMSED-PD 210 Tucker Blvd., North, St. Louis, Mo. 63101	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
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18. SUPPLEMENTARY NOTES

National Dam Safety ~~Inspection~~. Goose Creek Lake Dam (MO 30297), Mississippi - Kaskaskia - St. Louis Basin, St. Francois County, Missouri. Phase I Inspection Report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dam Safety, Lake, Dam Inspection, Private Dams

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report was prepared under the National Program of Inspection of Non-Federal Dams. This report assesses the general condition of the dam with respect to safety, based on available data and on visual inspection, to determine if the dam poses hazards to human life or property.

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DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
210 TUCKER BOULEVARD, NORTH
ST. LOUIS, MISSOURI 63101

REPLY TO ATTENTION OF

SUBJECT: Goose Creek Lake Dam Phase I Inspection Report

This report presents the results of field inspection and evaluation of the Goose Creek Lake Dam (MO 30297).

It was prepared under the National Program of Inspection of Non-Federal Dams.

This dam has been classified as unsafe, non-emergency by the St. Louis District as a result of the application of the following criteria:

a. Spillway will not pass 50 percent of the Probable Maximum Flood without overtopping the dam.

b. Overtopping of the dam could result in failure of the dam.

c. Dam failure significantly increases the hazard to loss of life downstream.

SUBMITTED BY: SIGNED — 17 JUL 1981
Chief, Engineering Division — Date

APPROVED BY: SIGNED — 17 JUL 1981
Colonel, CE, Commanding — Date

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GOOSE CREEK LAKE DAM

St Francois County, Missouri

Missouri Inventory No. 30297

Phase I Inspection Report

National Dam Safety Program

Prepared by

Woodward-Clyde Consultants

Chicago, Illinois

Under Direction of

St Louis District, Corps of Engineers

for

Governor of Missouri

June 1981

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams for Phase I Investigations. Copies of these guidelines may be obtained from the Office of the Chief of Engineers, Washington, D. C., 20314. The purpose of a Phase I investigation is not to provide a complete evaluation of the safety of the structure nor to provide a guarantee on its future integrity. Rather the purpose of the program is to identify potentially hazardous conditions to the extent they can be identified by a visual examination. The assessment of the general condition of the dam is based upon available data (if any) and visual inspections. Detailed investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify the need for more detailed studies. In view of the limited nature of the Phase I studies no assurance can be given that all deficiencies have been identified.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with any data which may be available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action removes the normal load on the structure, as well as the reservoir head along with seepage pressures, and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected, so that corrective action can be taken. Likewise continued care and maintenance are necessary to minimize the possibility of development of unsafe conditions.

PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam	Goose Creek Lake Dam
State Located	Missouri
County Located	St Francois
Stream	Goose Creek
Date of Inspection	27 April 1981

Goose Creek Lake Dam, Missouri Inventory Number 30297, was inspected by Richard Berggreen (engineering geologist), Craig Fulthorpe (geotechnical engineer), Jean-Yves Perez (geotechnical engineer), and Maryann Rivera (hydrologist). The dam is an earth embankment constructed to impound a reservoir for recreational purposes.

The dam inspection was made following the guidelines presented in the "Recommended Guidelines for Safety Inspection of Dams." These guidelines were developed by the Chief of Engineers, US Army, Washington, DC, with the help of federal and state agencies, professional engineering organizations, and private engineers. The resulting guidelines represent a concensus of the engineering profession. These guidelines are intended to provide for an expeditious identification of those dams which may pose hazards to human life or property, based on available data and a visual inspection. In view of the limited scope of the study, no assurance can be given that all deficiencies have been identified.

The St Louis District (SLD), Corps of Engineers, has classified this dam as having a high hazard potential. The potential damage zone length estimated by the SLD extends approximately nine miles downstream. Located within this estimated damage zone are a dam under construction (MO 31078) approximately one mile downstream, at least ten dwellings and numerous out-buildings. The contents of a portion of the damage zone were verified by aerial reconnaissance. The potential for loss of life and property is high in the event of dam failure.

Goose Creek Lake Dam is in the intermediate size classification based on its height of approximately 52 ft and storage capacity of 1900 ac-ft. The intermediate size classification criteria are: height between 40 and 100 ft, or storage capacity between 1000 and 50,000 ac-ft.

The results of the visual inspection indicate the embankment is in fair to good condition. No evidence of cracking of the embankment was noted, although two areas which might be old slumps were identified on the downstream slope. No animal burrows or sinkholes were found. Motorcycle traffic has worn a path on the downstream slope and may contribute to accelerated erosion in this area. The horizontal alignment of the crest appears undeformed; settlement appears to have lowered the center of the dam crest 18 to 24 in. below the ends of the dam. Drainage from the right abutment flows in a channel along the junction of the embankment and right abutment. Erosion in this channel has steepened the toe of the slope and may have contributed to shallow slumping in this area. No erosion protection has been installed on the upstream slope, but as of the visual inspection, wave erosion was relatively minor.

Hydraulic/hydrologic analyses indicate the dam will be overtopped by a flood which produces greater than 16 percent of the Probable Maximum Flood (PMF). The guidelines require intermediate size dams to store and pass 100 percent of the PMF without overtopping the embankment. The PMF is defined as the flood event that may be expected to occur from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region. The analyses also indicate the dam will not be overtopped by the 1 percent probability-of-occurrence flood (100 year flood). On the basis of this overtopping analysis the dam is considered to be in only fair condition. Overtopping of the depth and duration calculated for 100 percent of the PMF is considered likely to result in sufficient erosion to cause failure of this dam.

Based on our evaluation of the information obtained from the visual inspection and other available information, the following specific recommendations are made for Goose Creek Lake Dam. The recommendation regarding the spillway capacity should be implemented immediately. The other recommendations should be addressed without undue delay.

1. Prepare a detailed hydraulic/hydrologic analysis and design a spillway and discharge channel system capable of passing 100 percent of the PMF without overtopping the dam. The spillway should be protected from erosion and/or obstruction.

2. Seepage and stability analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" should be performed and made a matter of record. Such analyses should consider all appropriate loading conditions, including seismic loads, and should be made by an engineer experienced in the design and construction of earth dams.

3. Erosion control measures should be designed and implemented in the area at the junction of the embankment and right abutment.

4. Repair the path worn on the downstream slope and control vehicle traffic on the embankment.

It is also recommended that a formal program of periodic inspections and maintenance be developed and initiated at this facility. This program should be prepared by and performed under the guidance of an engineer experienced in the design, construction, and maintenance of earth dams. It should include but not be limited to the following items.

1. Inspect the embankment for evidence of cracking or slumping, settlement of the dam crest, or other evidence of slope instability. These inspections should specifically include the areas of shallow slumping noted in this Phase I inspection report (Fig. A-1).

2. Monitor the area of seepage near the toe of the dam to identify any changes in the amount of seepage or turbidity (soil) in the seepage water.

3. Remove the small trees growing on the downstream slope of the dam before they become large enough to pose a hazard to the stability of the dam. Vegetation on the dam should be maintained to the extent that it does not interfere with the recommended inspection program.

4. Maintain the spillway and discharge channel free of obstructions to flood flows.

5. Monitor wave erosion on the upstream slope and provide erosion control measures in the event erosion becomes significant or poses a hazard to the stability of the dam.

WOODWARD-CLYDE CONSULTANTS

Richard G. Berggreen
Registered Geologist, No 3572, CA

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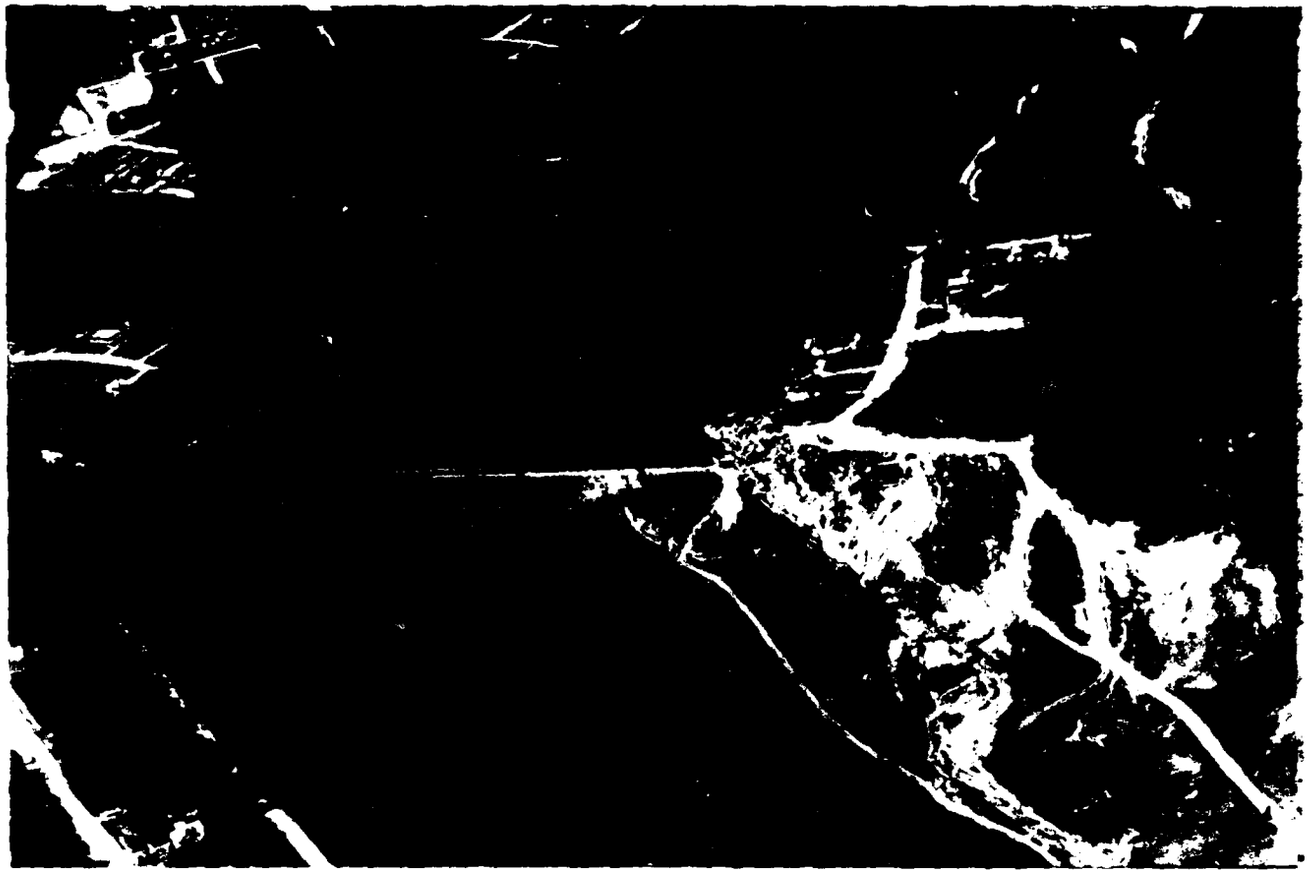
Vice President



OVERVIEW
GOOSE CREEK LAKE DAM

MISSOURI INVENTORY NUMBER 30297

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
GOOSE CREEK LAKE DAM - MISSOURI INVENTORY NO. 30297
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PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
GOOSE CREEK LAKE DAM, MISSOURI INVENTORY NO. 30297

SECTION 1
PROJECT INFORMATION

1.1 General

a. **Authority.** The National Dam Inspection Act, Public Law 92-367, provides for a national inventory and inspection of dams throughout the United States. Pursuant to the above, an inspection was conducted of Goose Creek Lake Dam, Missouri Inventory Number 30297.

b. **Purpose of Inspection.** "The primary purpose of the Phase I investigation program is to identify expeditiously those dams which may pose hazards to human life or property... The Phase I investigation will develop an assessment of the general condition with respect to safety of the project based upon available data and a visual inspection, determine any need for emergency measures, and conclude if additional studies, investigations and analyses are necessary and warranted" (Chapter 3, "Recommended Guidelines for Safety Inspection of Dams").

c. **Evaluation criteria.** The criteria used to evaluate the dam were established in the "Recommended Guidelines for Safety Inspection of Dams," and Engineering Regulation No. 1110-2-106 and Engineering Circular No. 1110-2-188, "Engineering and Design National Program for Inspection of Non-Federal Dams," developed by the Office of Chief of Engineers, Department of the Army; and "Hydrologic/Hydraulic Standards Phase I Safety Inspection of Non-Federal Dams," prepared by the St Louis District (SLD), Corps of Engineers. These guidelines were developed with the help of several federal agencies and many state agencies, professional engineering organizations, and private engineers.

1.2 Description of Project

a. **Description of dam and appurtenances.** Goose Creek Lake Dam is an earth embankment impounding a lake for recreational purposes. The area surrounding the lake is being developed for permanent and vacation residences. The dam crest varies from elevation 756.8 ft to 752.3 ft, being lower near the center of the dam. The height of the dam at the maximum section is approximately 52 ft. The crest of the dam varies from 10 to 20 ft in width. The downstream slope of the dam at the maximum section is approximately 3(H) to 1(V). The upstream slope from the crest to the waterline is approximately 4(H) to 1(V). The embankment was constructed of gravelly to bouldery silt and clay residual soil and is covered for the most part with grass and weed vegetation. A number of small trees are also growing on the downstream slope. There is no riprap or other erosion control measure on the upstream slope.

The spillway is an uncontrolled broad trapezoidal cut in weathered bedrock in the left abutment (as the observer faces downstream). A vertical dipping fault is exposed in the spillway cut but does not appear to trend under the dam. The downstream discharge channel is in weathered rock and residual soil and the banks of the channel may be subject to small slumps during heavy flows through the channel.

No other appurtenant structures were identified at this dam.

b. **Location.** The dam is located on Goose Creek, in Section 26, T38N, R6E, on the USGS Lawrenceton, Missouri 7.5-minute quadrangle map (1964). The dam and reservoir are in the Goose Creek development north of Missouri State Highway Y, about 2.5 miles east of the town of French Village in St Francois County, Missouri (Fig. 1).

c. **Size classification.** The dam is classified intermediate size based on its height of approximately 52 ft and storage capacity of 1900 ac-ft. The intermediate size classification includes dams between 40 and 100 ft in height, or having storage capacities between 1000 and 50,000 ac-ft.

d. **Hazard classification.** The St Louis District (SLD), Corps of Engineers, has classified this dam as having a high hazard potential; we concur with this classification. The damage zone length, as determined by the SLD, extends approximately nine miles downstream. Located within this estimated damage zone are a dam (MO 31078), and at least ten dwellings and numerous out-buildings. The contents of a portion of the downstream damage zone were verified by aerial reconnaissance. The potential for loss of life and property damage is high in the event of sudden failure of this dam.

e. **Ownership.** The dam is reportedly owned by the Goose Creek Land Company, 210 A Main Street, Festus, Missouri 63028. Correspondence should be to the attention of Mr Stu McCaleb.

f. **Purpose of dam.** The lake impounded by the dam is used for recreational purposes by the surrounding residential community.

g. **Design and construction history.** No design drawings or plans or construction reports were available for this dam. All information on the design and construction was obtained from Mr Stu McCaleb of the Goose Creek Land Company.

The dam was reported to have been designed by Mr Dewey Craig, resident surveyor for the Goose Creek development. Mr Craig died two to three years ago. No plans were found for Mr Craig's design. He reportedly surveyed-in and staked the limits of the embankment fill, and turned construction of the dam over to Black Construction Company of Bismark, Missouri. Black Construction Co was reported to no longer be active.

According to Mr McCaleb, the dam was constructed in 1970 and he was present for most of the construction. The dam was constructed as a homogeneous impermeable embankment of locally obtained gravelly to bouldery silt and clay residual soil. A cut-off trench was excavated through the foundation soils to bedrock, approximately one scraper blade wide (estimated at 10 ft wide). Mr McCaleb did not recall any drains or low level outlets at the dam.

The spillway was excavated by blasting in the left abutment. The spillway was deepened approximately 2 ft in 1975 also by blasting to lower the lake level. No significant siltation was noted at the upstream end of the reservoir following the lowering of the lake.

Some settlement of the embankment has occurred. Remedial measures included raising the dam crest approximately 18 to 24 in. about 2 years ago.

No other records or evidence of construction or modifications were found during the visual inspection.

h. **Normal operating procedures.** No facilities requiring operation were identified at this dam. Normal procedure is to pass flood flows through the ungated spillway at the left abutment.

1.3 Pertinent Data

a. **Drainage area.** 4.8 mi^2

b. **Discharge at damsite.**

Maximum known flood at damsite	Unknown
Warm water outlet at pool elevation	N/A (Not applicable)
Diversion tunnel low pool outlet at pool elevation	N/A
Diversion tunnel outlet at pool elevation	N/A
Gated spillway capacity at pool elevation	N/A
Gated spillway capacity at maximum pool elevation	N/A
Ungated spillway capacity at maximum pool elevation	1880 ft^3/sec
Total spillway capacity at maximum pool elevation	1880 ft^3/sec

c. **Elevation (ft above MSL).**

Top of dam	752.3 to 756.8
Maximum pool-design surcharge	N/A
Full flood control pool	N/A
Recreation pool (spillway crest)	744.7

Spillway crest (gated)	N/A
Upstream portal invert diversion tunnel	N/A
Downstream portal invert diversion tunnel	N/A
Streambed at centerline of dam	Unknown
Maximum tailwater	Unknown
Toe of dam at maximum section	700.5

d. **Reservoir.**

Length of maximum pool	6800 ft
Length of recreation pool	5500 ft
Length of flood control pool	N/A

e. **Storage (acre-feet).**

Recreation pool (spillway crest)	1200
Flood control pool	N/A
Design surcharge	N/A
Top of dam	1900

f. **Reservoir Surface (acres).**

Top of dam	108
Maximum pool	108
Flood control pool	N/A
Recreation pool	68
Spillway crest	68

g. **Dam.**

Type	Homogeneous earth embankment
Length	583 ft
Height	51.8 ft
Top width	Varies from 10 ft (near spillway) to 20 ft (near right abutment)
Side slopes	Downstream 2.5 - 3.5(H) to 1(V) Upstream 3 - 5(H) to 1(V) from crest to water level

Zoning	None, homogeneous embankment
Impervious core	Homogeneous impervious section
Cutoff	Trench to bedrock, approximately 10 ft wide
Grout curtain	None

h. **Diversion and regulating tunnel.**

Type	None
Length	N/A
Closure	N/A
Access	N/A
Regulating Facilities	N/A

i. **Spillway.**

Type	*Uncontrolled trapezoidal cut in left* abutment
Length of weir	35 ft at base, 55 ft at elevation of minimum top of dam
Crest elevation	744.7 ft
Gates	None
Downstream channel	Unlined channel in weathered bedrock and residual soil

j. **Regulating outlets.** None.

SECTION 2
ENGINEERING DATA

2.1 Design

The dam was reportedly designed by Mr Dewey Craig, resident surveyor for the Goose Creek development. Mr Craig died 2 to 3 years ago. No records or design plans were available for review. Mr Craig reportedly staked the limits of the embankment fill prior to beginning of construction.

2.2 Construction

The dam was constructed by Black Construction Company, Bismark, Missouri, in 1970. Black Construction Co was described by Mr McCaleb as no longer active.

Mr McCaleb was present for most of the construction and provided the following information. The dam consists of a homogeneous embankment constructed of locally obtained gravelly to bouldery silt and clay residual soil. A keyway was excavated to bedrock and was about one pull-scraper wide, (± 10 ft). Mr McCaleb has no recollection of any drains or low-level outlets at this facility.

The spillway was excavated into the left abutment by blasting. The spillway was lowered an additional 2 ft in 1975, also by blasting.

2.3 Operation

There are no records of flow history through the spillway. Flood flows are passed through the ungated spillway. No facilities requiring operation were identified at this dam.

2.4 Evaluation

a. **Availability.** Design and construction data on Goose Creek Lake Dam were limited to interviews with Mr Stu McCaleb of the Goose Creek Land Company. No design plans or drawings or construction reports were available for review.

b. **Adequacy.** The available data are insufficient to evaluate the adequacy of design of Goose Creek Lake Dam. Seepage and stability analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" were not on record, which is considered a deficiency. These seepage and stability analyses should be performed for appropriate loading conditions, including seismic loads, and made a matter of record. The analyses should be performed by an engineer experienced in the design and construction of earth dams.

c. **Validity.** There was no reason to question the validity of the information obtained from Mr McCaleb. However, the information was incomplete.

2.5 Project Geology

The dam site is located on the northern flank of the Ozark structural dome. According to the Geologic Map of Missouri (1979), the area of the dam site lies in close proximity to the contact between the Cambrain age Potosi and Eminence Dolomite formations and the Ordovician age Gasconade Dolomite formation.

The Potosi Dolomite, a light gray, medium- to fine-grained dolomite, typically contains an abundance of quartz druse associated with chert deposits within the formation. The Eminence Dolomite conformably overlies the Potosi Dolomite and is similar in appearance but contains less chert and quartz. The Gasconade Dolomite is a light brownish gray, cherty dolomite and can be divided into a lower coarsely crystalline portion which is extremely cherty, and an upper finely crystalline portion which is relatively less cherty. A sandstone unit (the Gunter member) forms the lowermost part of the formation.

The soil exposed at the dam site is a gravelly to bouldery silt and clay residual soil (CL). The soil was sampled and classified in the field. It is mapped and described in the Missouri General Soil Map and Soil Association Descriptions (1979) as the Union-Goss-Gasconade-Peridge Soil Association. A short distance west of the dam site the Peridge-Cantwell-Gasconade Soil Association becomes predominant.

There are a number of faults and folds mapped in the area of the dam site. The St. Genevieve Fault System, a complex network of generally NW-SE trending faults, is mapped less than 1 mile east of the dam site. A fault was observed at the spillway of the dam during the field investigation, and may be a branch of the St. Genevieve system.

A NW-SE trending structure called the Rugley School Fault Block or Fault is mapped on the Structural Features Map of Missouri (1971) about 2 miles northwest of the dam site. A number of faults associated with the NW-SE trending Ditch Creek Fault System are mapped within 4-6 miles west and northwest of the dam site. These faults, like most others in the Ozark region, are within Precambrian and Paleozoic formations, and are likely Paleozoic in age. They are not considered seismically active.

There are two anticlines mapped in the vicinity of the dam site on the Structural Features Map of Missouri. The northern portion of the NW-SE trending Farmington Anticline is located approximately 3.5 miles southwest of the dam site, and the southernmost extension of the NE-SW trending Plattin Creek Anticline is located about 6 miles northwest of the dam site.

The dam is located approximately 85 miles north of the line of epicenters for the very large New Madrid earthquakes of 1811 and 1812. A recurrence of an earthquake of the magnitude of the New Madrid events could cause damage to this dam, but an assessment of this risk is beyond the scope of this Phase I investigation.

SECTION 3
VISUAL INSPECTION

3.1 Findings

a. **General.** A visual inspection was made of Goose Creek Dam on 27 April 1981. No representative of the owner of the dam was present during the inspection. The inspection indicates the dam is in generally fair to good condition.

b. **Dam.** The dam is an earth embankment approximately 52 ft in height. It was constructed of locally obtained silt and clay (CL) residual soil containing numerous gravel- to boulder-size rock fragments (Photo 1). Boulders to several feet in diameter were noted in portions of the embankment fill. The fine fraction of the fill is residual clay and silt, red-brown to tan, slightly plastic to non-plastic, developed by weathering of the carbonate and sandstone bedrock in the area.

Bedrock exposed in the spillway cut indicates two rock types are present in the area. The two rock types are separated by a vertical-dipping fault striking N55^{o} W (Photo 2). Upstream or west of the fault and underlying the dam, the bedrock consists of hard white quartzite, perhaps the Gunter member of the Gasconade Formation. The soil developed on the quartzite is relatively thin, sandy, and light gray to tan in color. Downstream or east of the fault, the bedrock consists of deeply weathered dolomite, either the Gasconade or Eminence Dolomite. Relative movement on the fault could not be determined from the limited exposures in the spillway.

The upstream and downstream slopes of the embankment are covered by grass and weed vegetation with scattered bare spots (Photo 3). Small trees are also scattered across the downstream slope. These trees should be removed before they become large enough to pose a hazard to the dam.

A motorcycle or off-road vehicle path was noted on downstream slope of the dam. This traffic should be kept off the dam as erosion will concentrate in the vehicle tracks.

The embankment materials and vegetative cover indicate the dam is moderately resistant to erosion by running water. Only minor rilling erosion was noted on the downstream slope of the dam. Runoff from the right abutment (as the observer faces downstream) flows into a channel at the junction of the downstream slope of the embankment and right abutment. This channel has eroded the embankment and locally oversteepened the toe of the slope (see Fig. A-1).

No cracking was identified on the dam. However, two areas of indistinct scarp-like features were noted (see Fig. A-1). One area approximately 50 ft wide and extending about half up the slope of the dam appears to be a shallow slump associated with the oversteepening at the toe of the right side of the dam. A second area approximately 100 ft wide and extending about two-thirds up the slope near the left end of the dam also appeared to be a shallow slump. Some of the small trees in the body of this slump were inclined down slope. The lack of distinct scarps or other slump features indicates these are likely older slumps that have not moved recently. However, the areas should be periodically inspected to identify any renewed movement.

Evidence of seepage was limited to an area of cattail vegetation at the toe of the dam (Photo 4). Although no flow was noted during the inspection, lush green vegetation at the toe of the dam suggests a slow rate of seepage may be present. The cattail vegetation could also be the result of ponding of abutment and slope drainage in a low at the toe of the dam. In either case, the seepage did not appear sufficient to pose a hazard to the stability of the dam.

No disruption was noted in the horizontal alignment of the dam crest. However, some settlement was reported by the dam owner's representative, Mr Stu McCaleb, and the crest of the dam appears lowest near the maximum section. Mr McCaleb reported 18 to 24 in. of fill was added to the dam crest approximately 2 years ago, but the field survey conducted for this report indicated the center of the dam is still approximately 18 to 24 in. lower than the ends of the dam (Fig. 3A). During the visual inspection an area of rocky fill was noted from about the middle of the dam crest to the left (spillway) end of the dam, specifically on the upstream slope (Photo 5). This appears to be the area where new fill has been added to the crest of the dam.

No evidence of animal burrows or sinkhole development was noted on the embankment during the visual inspection.

No riprap or other erosion control measures have been installed along the upstream slope. Some wave erosion has occurred about 2 ft above the current lake level. This may have occurred when the lake level was approximately 2 ft higher. It was reported by Mr McCaleb that the spillway sill was lowered about 2 ft several years ago to remove weeds at the upstream end of the reservoir. Wave erosion will likely continue to occur, but at present does not appear to pose a significant hazard to the dam.

c. **Appurtenant structures.** The spillway for this dam is a trapezoidal cut in weathered bedrock at the left or north end of the dam (Photo 6). The spillway is about 35 ft wide at the base and 55 ft wide at the elevation of the minimum top of dam. There are no gates or other control structures at the spillway. The remnants of an old concrete weir can be seen in the spillway (Photo 7), but it was either removed by man or destroyed by erosion. It was reported by Mr McCaleb that the spillway crest was lowered several years ago to allow clearing of weeds in the upstream ends of the reservoir. This lowering may have been accomplished by removal of the concrete weir.

No other appurtenant structures were identified at this dam.

d. **Reservoir area.** The area surrounding the reservoir is being developed as a residential/vacation home community. Scattered development of lots and road building will likely continue to supply limited sediment to the lake. The lowering of the lake several years ago showed no evidence of siltation of the upstream end of the reservoir.

The slopes surrounding the reservoir vary from quite steep, 1(H) to 1(V), (Photo 8), to fairly gentle, flatter than 5 (H) to 1 (V). No evidence of unstable slopes adjacent to the reservoir was noted.

e. **Downstream channel.** The channel downstream of the spillway is a deeply eroded trapezoidal channel along the left side of the valley (Photo 9). Erosion

appears to be continuing in the channel and small slumps were noted along portions of the channel walls. However, none of these slumps appears large enough to pose a significant obstruction to flow in the channel.

3.2 Evaluation

The visual inspection indicates the dam and appurtenant structures are in fair to good condition. No evidence was noted of animal burrows, sinkhole development, significant erosion or seepage. Some erosion at the junction with the right abutment has caused local oversteepening of the toe of the downstream slope. The embankment appears to have experienced some settlement, with the dam crest near the maximum section being approximately 18 to 24 in. lower than the ends of the dam.

Two indistinct slumps were noted on the downstream slope. These slumps lack well defined scarps or other distinct slump features, suggesting they are old shallow slumps. Although these slumps do not appear presently active, periodic inspection is recommended to detect renewed movement, if any. The spillway was excavated in weathered bedrock at the left abutment and does not appear subject to significant erosion during flood flows. The downstream channel below the spillway was excavated in weathered bedrock and residual soil. Erosion and slumping of the banks of this channel were noted during the visual inspection. However, the slumps appear to be small and are not considered sufficient to be a significant obstruction to flow.

SECTION 4
OPERATIONAL PROCEDURES

4.1 Procedures

No records are available of operating procedures at this facility. Water level in the reservoir is controlled by flow through the ungated spillway. Normal operating procedure is to allow natural drainage through the spillway.

4.2 Maintenance of Dam

There is no formal plan for inspection and maintenance of the dam. Mr McCaleb reported that necessary maintenance is performed by the construction crew or foreman working for the Goose Creek development. Recent maintenance included the addition of 18 to 24 in. of fill to the dam crest to raise the dam following gradual settlement.

No riprap or other erosion control measure has been installed on the upstream slope. Wave erosion to date has not been significant and the area does not pose a hazard to the safety of the dam at present. However, some maintenance may be required as erosion progresses.

4.3 Maintenance of Operating Facilities

No facilities requiring operation were identified at this dam.

4.4 Description of Any Warning System in Effect

The visual inspection did not identify any warning system in effect at this dam.

4.5 Evaluation

There is no formal maintenance or inspection program in effect at this facility. At present informal inspection and maintenance needs are performed by construction crews and foreman for the development company. However, as the development nears completion and these personnel are no longer available, the implementation of a formal inspection and maintenance program will be necessary to assure the continued monitoring of the facility. It is recommended such a program be developed and implemented under the guidance of an engineer experienced in the construction and maintenance of earth dams.

The feasibility of a practical and effective warning system should also be evaluated, to alert downstream residents in the event unsafe conditions develop at this dam.

SECTION 5
HYDRAULIC/HYDROLOGIC

5.1 Evaluation of Features

a. **Design data.** No hydrologic or hydraulic design data were available for evaluation of this dam or reservoir; however, dimensions of the dam were surveyed. The survey data were supplied by James F. McCaul III and Associates, Potosi, Missouri. Other relevant data were measured during the visual inspection or estimated from topographic mapping. The maps used in the analyses were the USGS Lawrenceton and French Village, Missouri 7.5-minute quadrangle maps.

b. **Experience data.** No recorded rainfall, runoff, discharge, or pool stage historical data were found for this reservoir. There was no evidence or record of past overtopping of the embankment.

c. **Visual observations.**

1. Watershed. The watershed consists of scattered residential and vacation homes, pasture and dense natural woodlands. The area of the reservoir is about 3 percent of the total drainage area of 4.8 mi^2. For the purposes of the overtopping analysis, the watershed was divided into two sub-basins, the main Goose Creek basin, and a small tributary basin to the north (see Fig. 2).

2. Reservoir. The reservoir, dam and spillway are best described by the maps and photographs enclosed herewith. The reservoir is used for recreational purposes.

3. Spillway. An open channel spillway is located at the left (north) end of the dam. The spillway discharge channel drops steeply within a short distance. The controlling section for discharge is slightly downstream of the entrance of the spillway, at the steep drop in gradient of the channel, Section EE of Fig. 3-B.

d. **Overtopping potential.** One of the primary considerations in the evaluation of this dam is the assessment of the potential for overtopping and possible consequent failure by erosion of the embankment. The lowest portion of the dam is near the middle of the dam and was considered to be the top of the dam for the purpose of determining overtopping potential. Since the spillway of this dam was blasted into bedrock, erosion of the spillway due to high velocity discharge is not expected to be a major consideration.

Hydraulic analyses of this dam for the 1 and 10 percent probability-of-occurrence and Probable Maximum Floods (PMF) were all based on initial water surface elevations equal to the minimum elevation of the spillway section. The result of the analysis indicates that a flood of greater than 16 percent of the PMF will overtop the dam. The PMF is defined as the flood event that may be expected to occur from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region. The "Recommended Guidelines for Safety Inspection of Dams" require high hazard potential, intermediate size dams to pass a spillway design flood of 100 percent of the PMF. The analyses also indicate that the spillway will pass the 1 percent probability-of- occurrence (100 year recurrence interval) flood event without overtopping the dam. The 1 percent probability-of-occurrence flood event is the flood event that has 1 percent chance of occurring in any year, or occurs on the average once every 100 years. The total spillway capacity at maximum pool elevation is approximately 1900 ft^3/sec.

The following overtopping data for various flood events were computed for the dam assuming no erosion of the dam or spillway.

Precipitation Event	Maximum Reservoir Elevation, ft, (MSL)	Maximum Depth Over Dam, ft	Maximum Outflow, ft^3/sec	Duration of Overtopping, hrs
1% Prob	752.0	0	1,715	0
16% PMF	752.1	0	1,804	0
50% PMF	755.6	3.3	9,200	7.0
100% PMF	757.4	5.1	18,600	10.3

It should be noted that at 100 percent of the PMF the depth of flow during overtopping may reach 5.1 ft and the dam may be overtopped for 10.3 hours. Overtopping flows of this depth and duration is considered likely to result in sufficient erosion to cause failure of the dam.

Input data and output summaries for the hydrologic and hydraulic analyses are presented in the attached Appendix B.

SECTION 6
STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. **Visual inspection.** The visual inspection of Goose Creek Lake Dam indicated the dam is in fair to good condition. No evidence was noted of sinkhole development or animal burrows on the embankment. No cracking was noted, but two indistinct shallow slumps were identified on the downstream face of the embankment (Fig. A-1). These slumps appeared to be old features as the scarps or toes were not well defined. These slumps do not appear active at present, and are not considered to pose a short-term significant hazard to the stability of the dam. However, these areas should be inspected periodically to identify any renewed movement.

Erosion on the slopes of the dam was relatively minor and consisted of shallow erosion gullies. At the junction of the downstream face of the embankment with the right abutment, drainage from the abutment is confined in a ditch at the toe of the dam. Erosion of this ditch has steepened the toe of the slope and may have contributed to the shallow slumping observed in this area.

Mr McCaleb reported the crest of the dam had settled and the field survey (Fig 3-A) indicates the crest near the center of the dam is 18 to 24 in. lower than at the ends. The horizontal alignment of the dam crest appears undeformed.

The spillway was excavated by blasting in the left abutment. Erosion in this area due to flood flows is not anticipated to be significant. Some bank erosion as small scale slumping will likely occur in the downstream discharge channel, but is not anticipated to impact the stability of the dam due to the distance from the main embankment.

b. **Design and construction data.** No design plans or construction records were available for review. Information on the design and construction was obtained from interviews with Mr Stu McCaleb of Goose Creek Land Co. These data are summarized in Sections 1.2, 2.1, and 2.2.

Seepage and stability analyses as per the "Recommended Guidelines for Safety Inspection of Dams" were not available which is considered a deficiency.

c. **Operating records.** No operating records, water level or spillway discharge records are maintained for this facility.

d. **Post construction changes.** Two post construction changes were reported to the inspection team by Mr McCaleb. In 1975, the spillway was deepened by about 2 ft. in order to lower the lake level.

In 1978 or 1979, 18 to 24 in. of fill was reportedly added to the dam crest. This was necessary due to gradual settlement of the embankment. The field inspection noted that the new fill appeared to be confined to the left (north) half of the embankment. The center of the crest near the maximum section still is 18 to 24 in. lower than the ends of the dam. It could not be determined if this was the result of continued settlement or incomplete repair of the settlement which had occurred prior to the remedial work.

e. **Seismic stability.** The dam is located in Seismic Zone 2, to which the guidelines assign a moderate damage potential. During a seismic event, liquifaction of the soil embankment materials is unlikely. However, without an evaluation of the static stability of the dam or knowledge of the soil properties of the embankment materials, the seismic stability cannot be evaluated.

SECTION 7
ASSESSMENT/REMEDIAL MEASURES

7.1 Dam Assessment

a. **Safety.** Based on our visual inspection and the evaluation of available data, the dam appears to be in fair to good condition.

Two apparently shallow slumps, approximately 50 and 100 ft wide, were identified on the downstream slope of the dam, but appear to be old features and are not considered to pose a significant hazard to the dam at present. Drainage from the right abutment has eroded a gully at the junction of the embankment and right abutment, locally steepening the toe of the slope and possibly contributing to the slumping in this area. Seepage noted at the toe of the dam was insignificant at the time of the inspection.

Some settlement has occurred in the embankment. It was reported that 18 to 24-in. of fill was added to the dam crest, but the field survey shows the center of the dam is still lower than the ends of the dam crest. The horizontal alignment appears undisrupted. No evidence was noted of animal burrows or sinkhole development on the embankment. Vehicle traffic on the downstream slope has worn a path that may contribute to erosion in this area.

Hydraulic/hydrologic analysis indicate the dam will be overtopped by a flood event greater than 16 percent of the PMF. The guidelines require intermediate size dams to store and pass 100 percent of the PMF without overtopping the embankment. The analysis also indicates the reservoir and spillway will store and pass the 1 percent probability-of-occurrence flood (100 year flood) without overtopping the dam.

Seepage and stability analyses as per the "Recommended Guidelines for Safety Inspection of Dams" were not available which is considered a deficiency.

b. **Adequacy of information.** The visual inspection and other information obtained for this dam provided sufficient information to support the conclusions and recommendations presented in this Phase I inspection report.

However, no design plans or as-built construction records were available for review. The geometry of the dam section, materials properties, seepage or stability analyses are not on record. This precludes a complete evaluation of the dam and is considered a deficiency which should be rectified. Seepage and stability analyses as per the guidelines should be performed by an engineer experienced in design and construction of earth dams.

c. **Urgency.** The deficiencies described in this report could affect the safety of the dam. Remedial measures and further studies presented in Section 7.2 should be implemented without undue delay. The recommendation regarding the spillway capacity should be implemented immediately.

d. **Necessity for Phase II.** In accordance with the "Recommended Guidelines for Safety Inspections of Dams," the subject investigation was a minimum study. This study revealed that additional in-depth investigations are needed to complete the assessment of the safety of the dam. Those investigations which should be performed without undue delay are described in Section 7.2b. It is our understanding from discussions with the SLD that any additional investigations are the responsibility of the owner.

7.2 Remedial Measures

a. **Alternatives.** There are several general options which may be considered to reduce the possibility of dam failure or to diminish the harmful consequences of such a failure. Some of these general options are listed below.

1. Remove the dam, or breach it to prevent storage of water.

2. Increase the height of dam and/or spillway size to pass the PMF without overtopping the dam.

3. Purchase downstream land that would be adversely impacted by dam failure and restrict human occupancy.

4. Provide a highly reliable flood warning system (generally does not prevent damange but diminishes chances for loss of life).

b. **Recommendations.** Based on our inspection of Goose Creek Lake Dam and evaluation of available data, it is recommended the following items be addressed without undue delay. The recommendation regarding the spillway capacity should be implemented immediately.

1. Prepare a detailed hydraulic/hydrologic analysis and design a spillway and discharge channel system capable of passing 100 percent of the PMF without overtopping the dam. The spillway should be protected from erosion and/or obstruction.

2. Seepage and stability analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" should be performed and made a matter of record. Such analyses should consider all appropriate loading conditions, including seismic loads, and should be made by an engineer experienced in the design and construction of earth dams.

3. Erosion control measures should be designed and implemented in the area at the junction of the embankment and right abutment.

4. Repair the path worn by motorcycle traffic on the downstream slope and control vehicle traffic on the embankment.

c. **O & M procedures.** It is recommended that a formal program of periodic inspections and maintenance be developed and initiated at this facility. This program should be prepared by and performed under the guidance of an engineer experienced in the design, construction, and maintenance of earth dams. It should include but not be limited to the following items.

1. Inspect the embankment for evidence of cracking or slumping, settlement of the dam crest, or other evidence of slope instability. These

inspections should specifically include the areas of shallow slumping noted in this Phase I inspection report (Fig. A-1).

2. Monitor the area of seepage near the toe of the dam to identify any changes in the amount of seepage or turbidity (soil) in the seepage water.

3. Remove the small trees growing on the downstream slope of the dam before they become large enough to pose a hazard to the stability of the dam. Vegetation on the dam should be maintained to the extent that it does not interfere with the inspection program.

4. Maintain the spillway and discharge channel free of obstructions to flood flows.

5. Monitor wave erosion on the upstream slope and provide erosion control measures in the event erosion becomes significant or poses a hazard to the stability of the dam.

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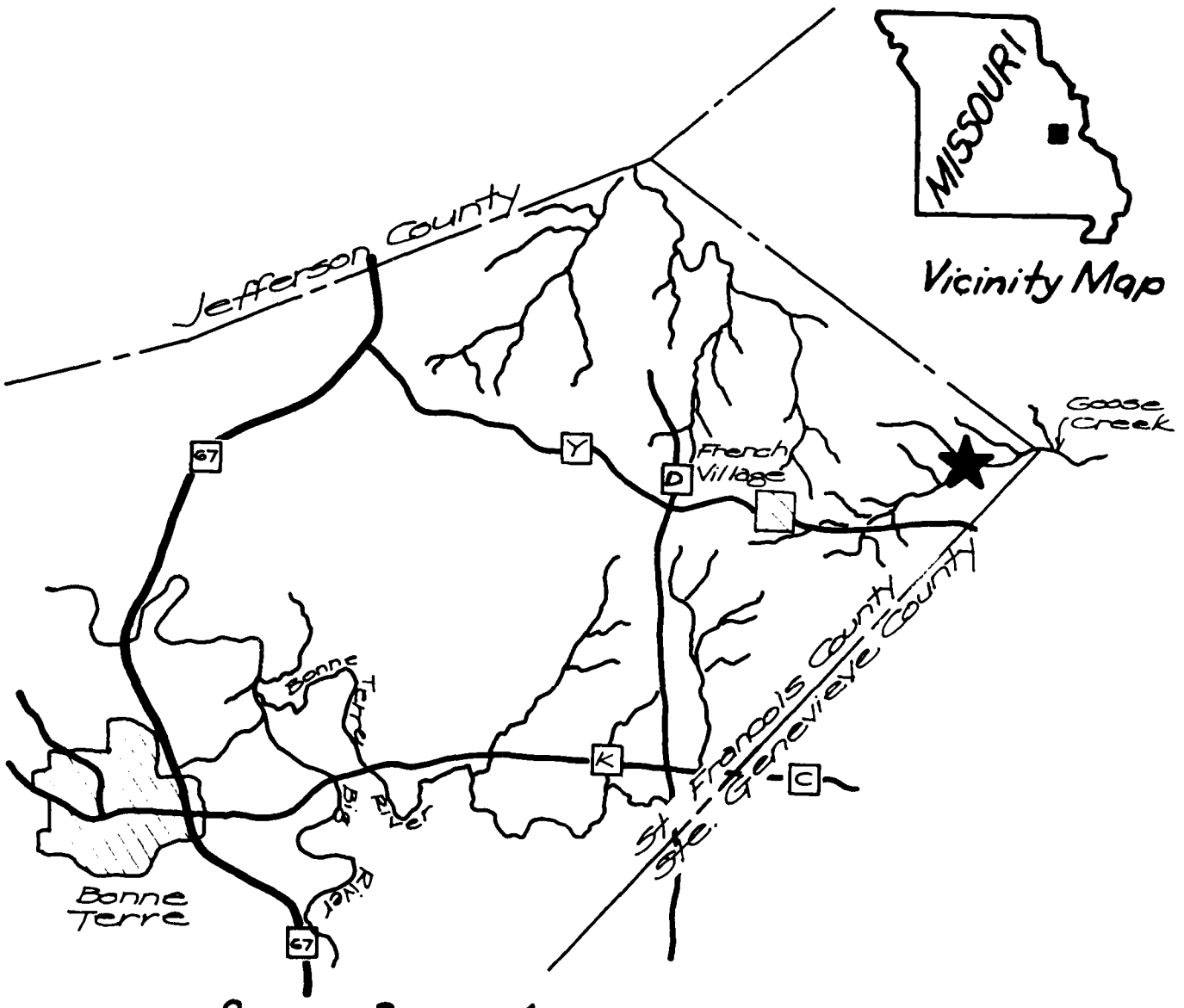
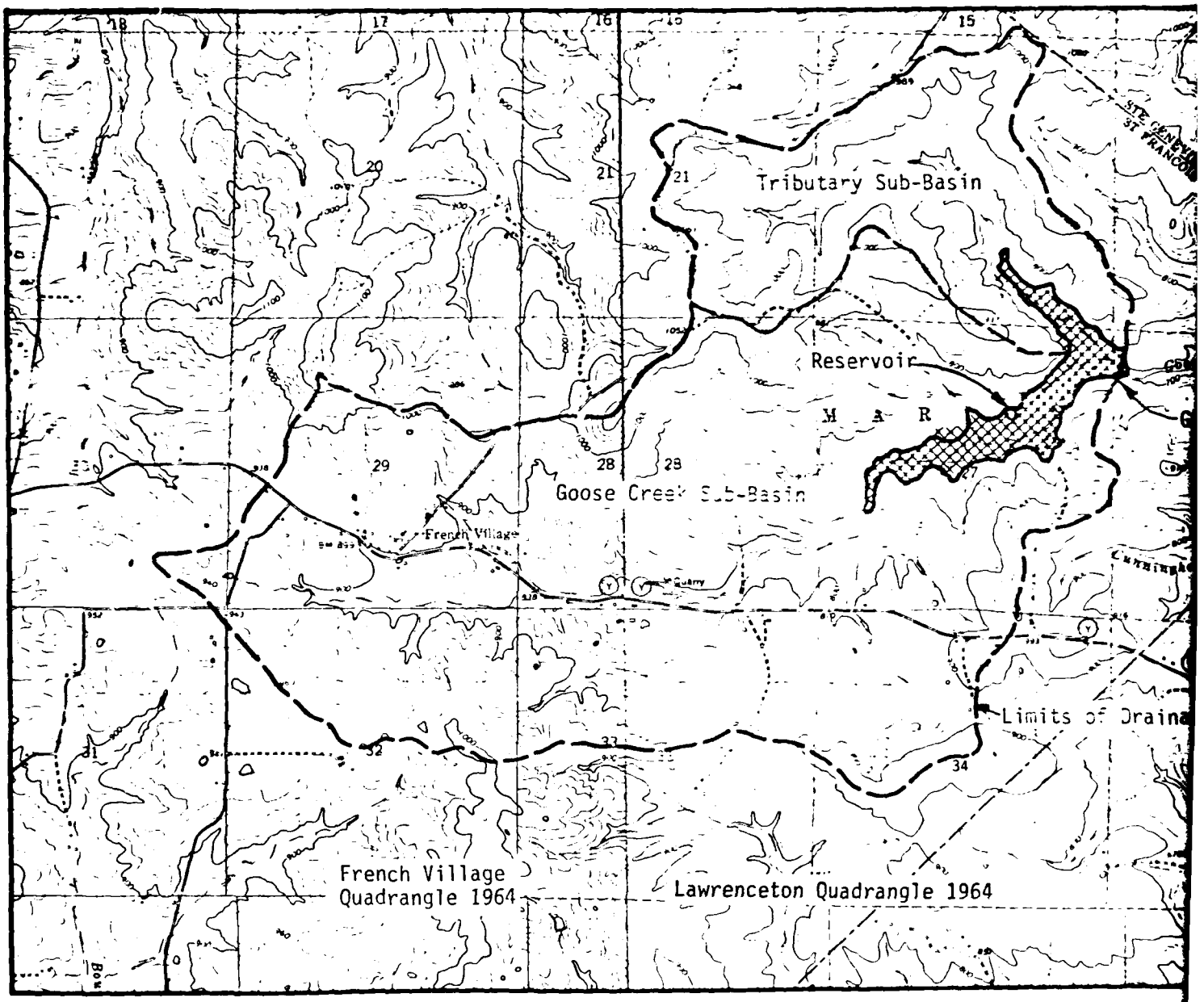


Legend

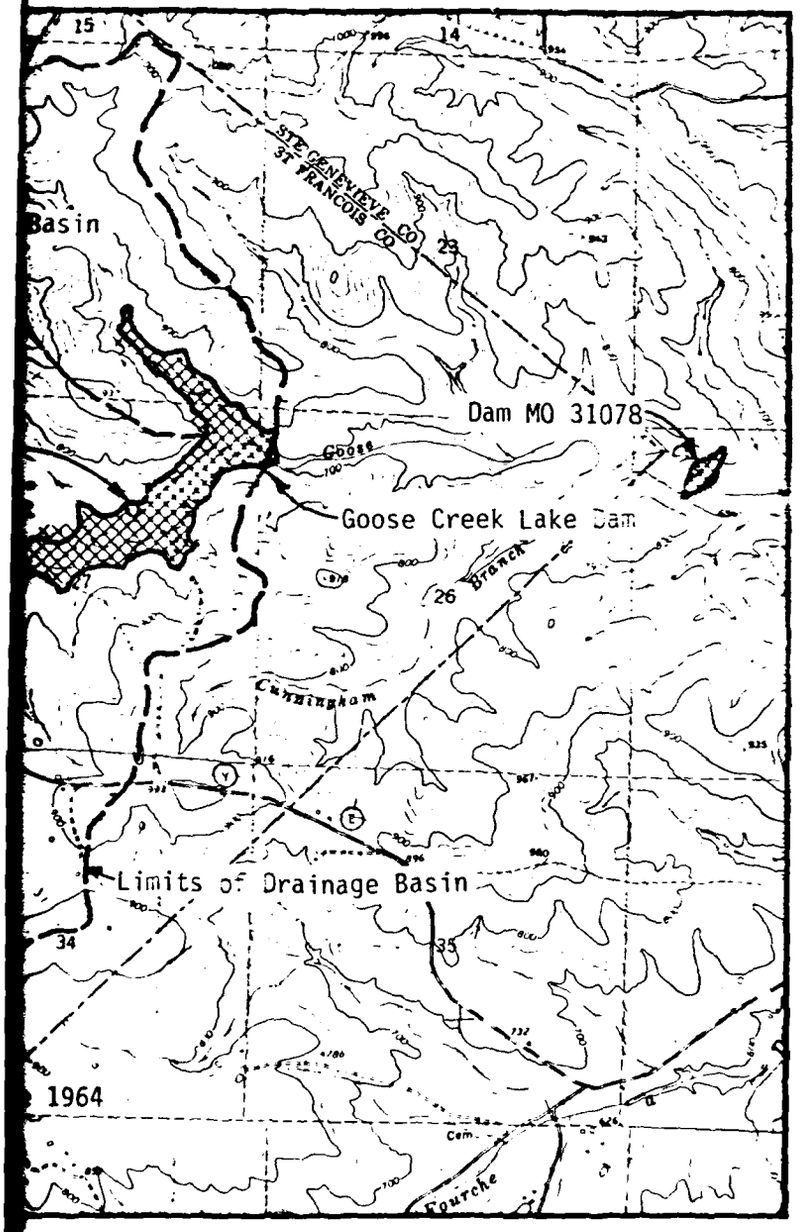
- County Line
- State highway and Route No.
- River or Creek
- City or Town
- Project location

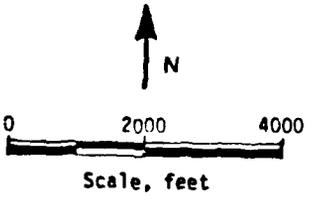
SITE LOCATION MAP	
GOOSE CREEK LAKE DAM	
MO. 30297	Fig. 1



Notes:

1. Topo
and
Quad





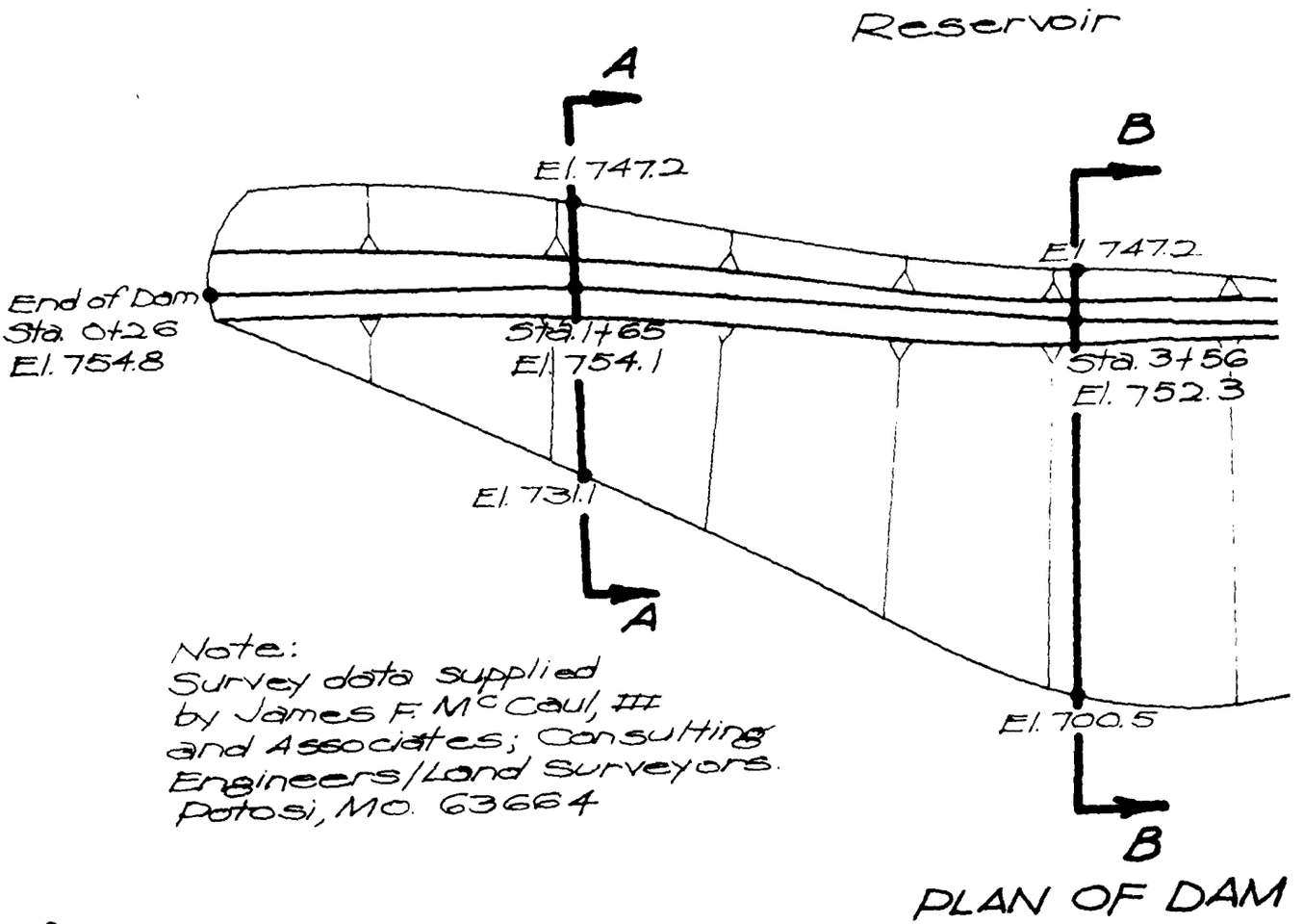
DRAINAGE BASIN AND SITE TOPOGRAPHY

GOOSE CREEK LAKE DAM

MO. 30297 | Fig. 2

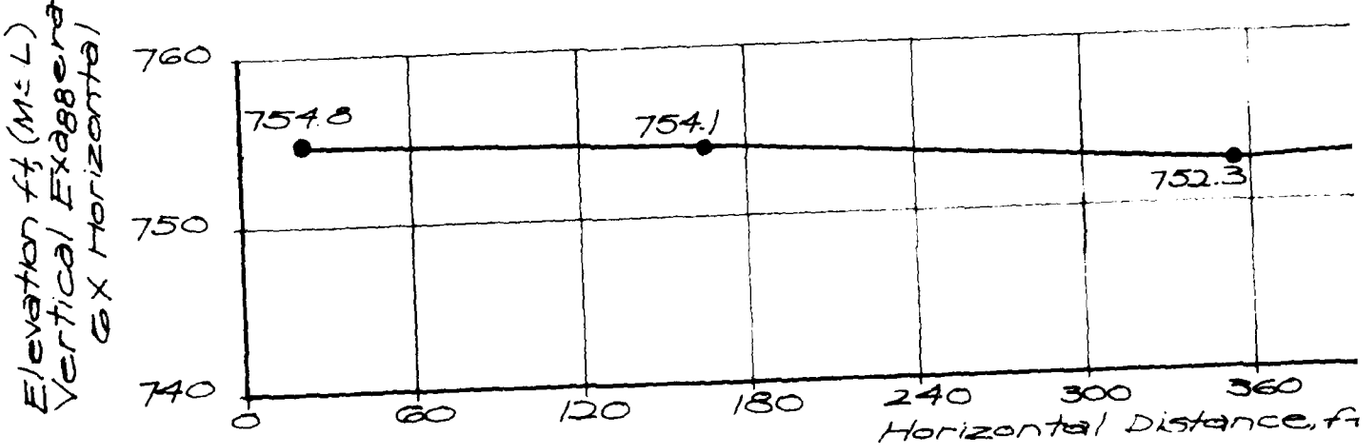
Notes:

1. Topography from USGS Lawrenceton (1964) and French Village (1964) 7.5-minute Quadrangle Maps

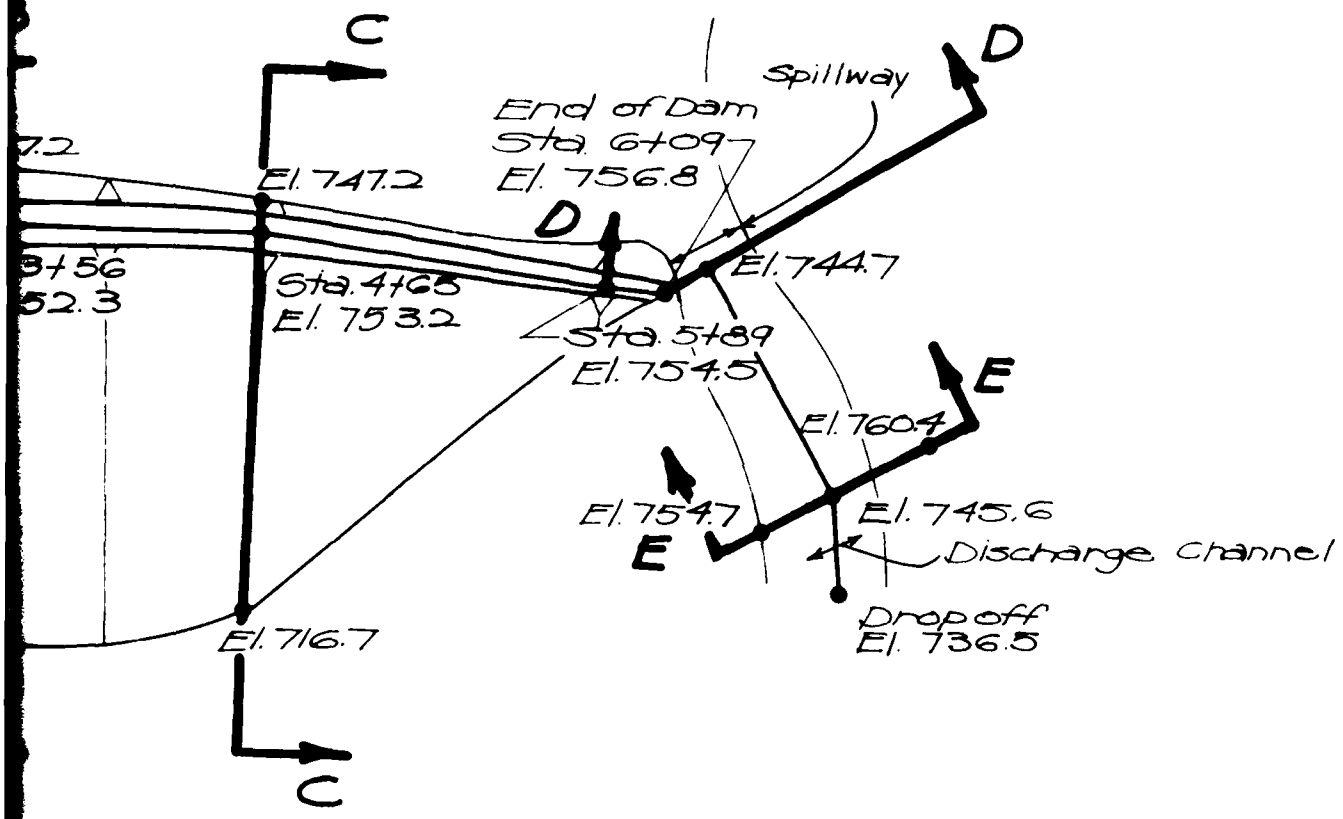


Note:
Survey data supplied by James F. McCaul, III and Associates; Consulting Engineers/Land Surveyors. Potosi, MO. 63664

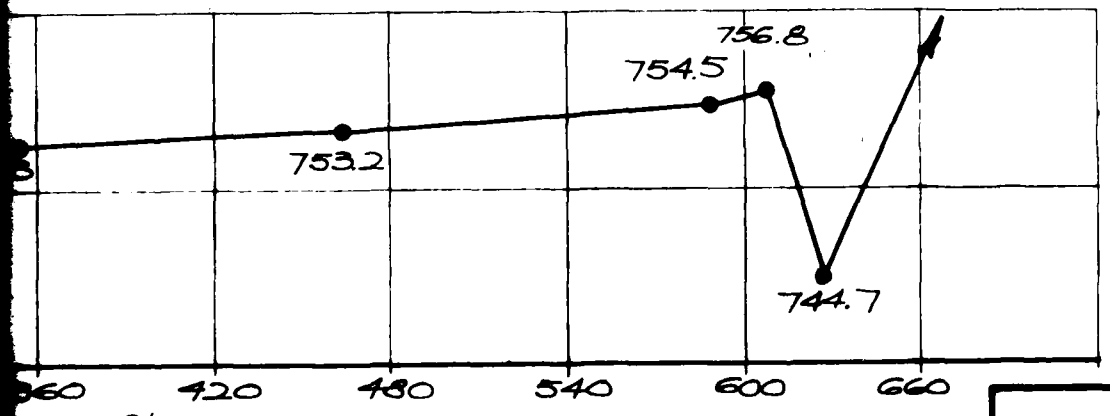
PLAN OF DAM



DAM CREST PROF



DAM

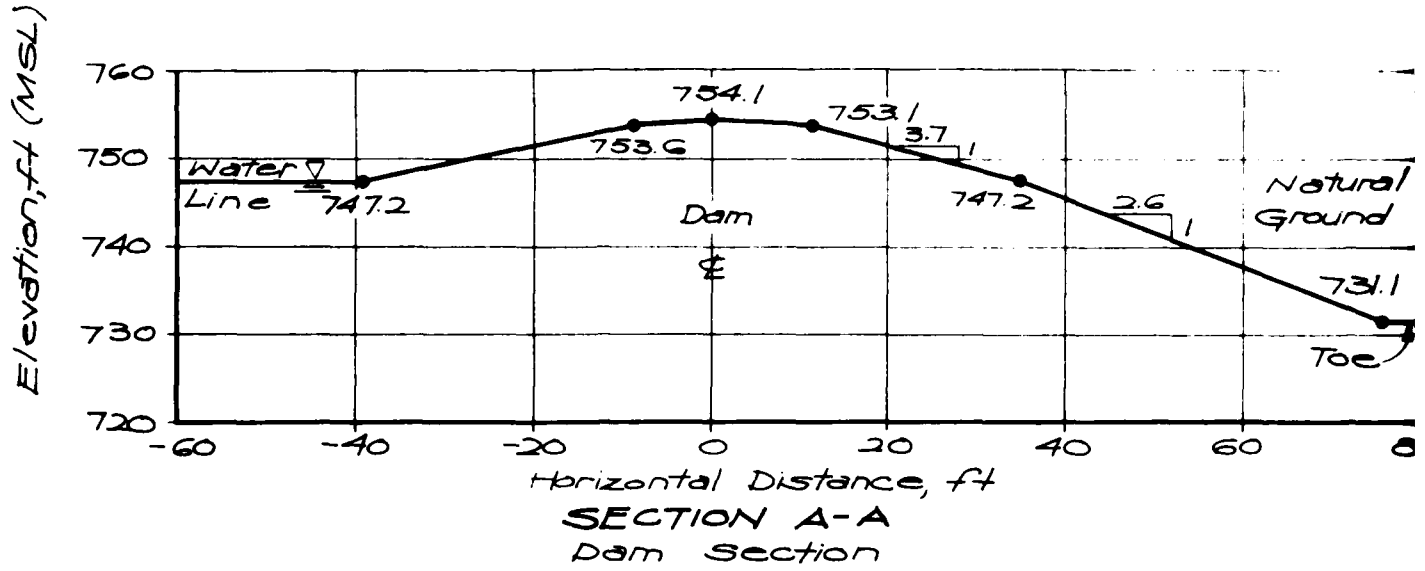


PROFILE

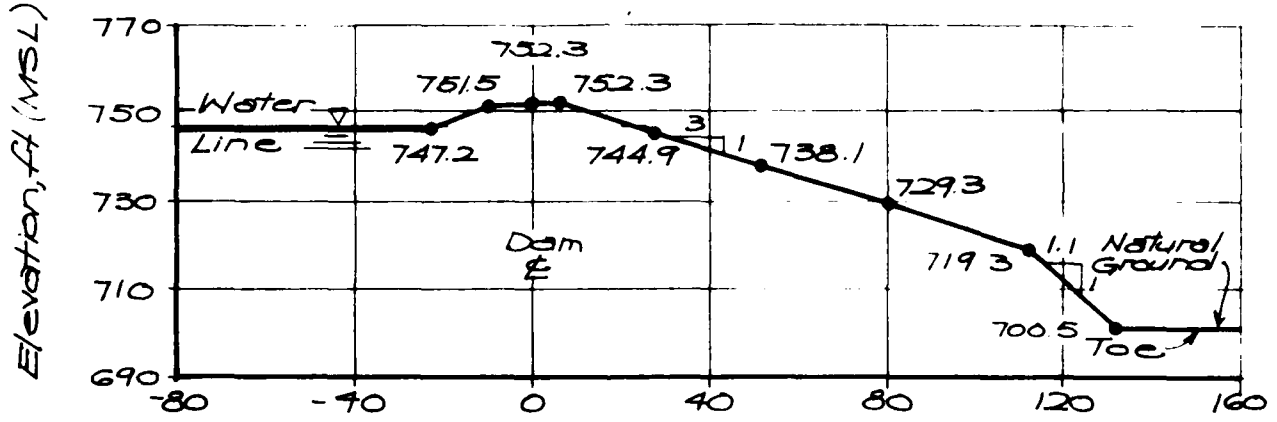
PLAN AND PROFILE OF DAM

GOOSE CREEK LAKE DAM

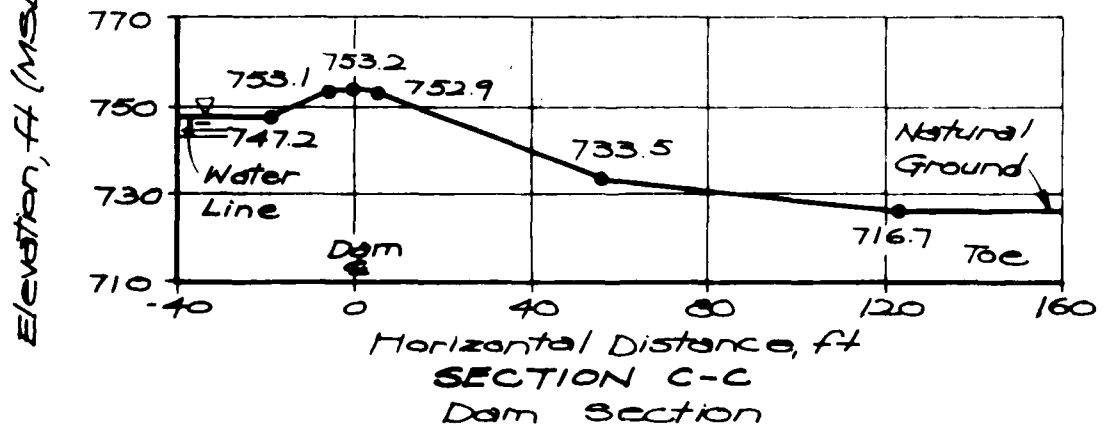
MO 30297 | Fig. 3-A



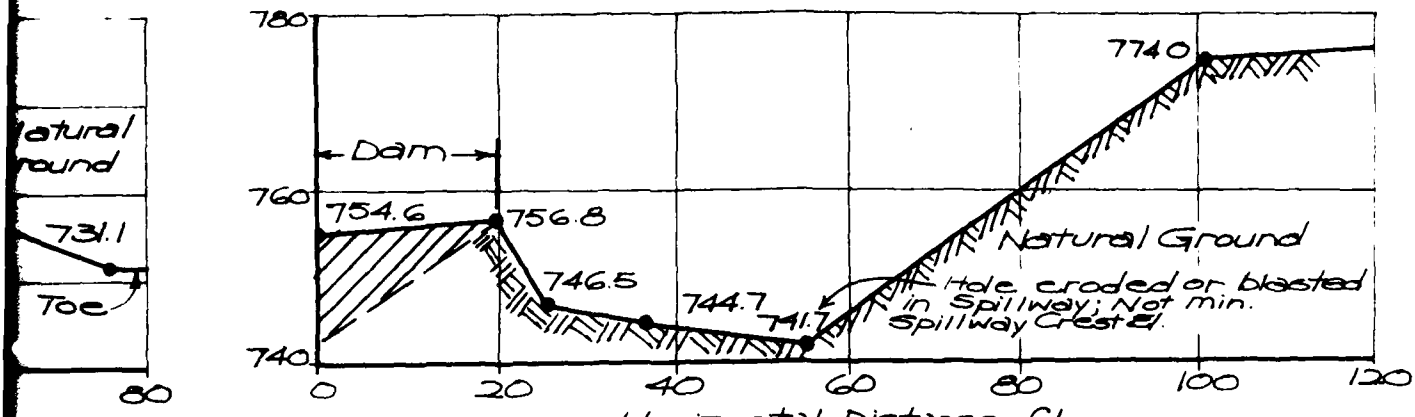
SECTION A-A
Dam Section



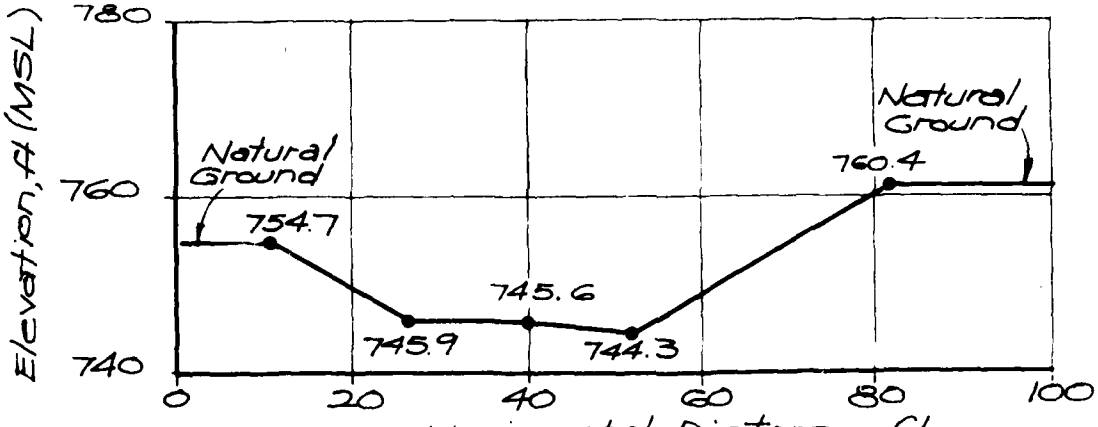
SECTION B-B
Maximum Dam Section



SECTION C-C
Dam Section



SECTION D-D
Spillway Section



SECTION E-E
Discharge Channel

SECTIONS OF DAM SPILLWAY AND DISCHARGE CHANNEL	
GOOSE CREEK LAKE DAM	
MO 30297	Fig. 3-8

Legend

- Smithville Formation
- Powell Dolomite
- Cotter Dolomite
- Jefferson City Dolomite

Ojc

Or

- Roubidoux Formation

- Gasconade Dolomite
  - Gunter Sandstone Member

- Eminence Dolomite

Cep

- Potosi Dolomite

- Derby-Doerun Dolomite

- Davis Formation

Ceb

- Bonneterre Formation
  - Whetstone Creek Member
  - Sullivan Siltstone Member

- Reagan Sandstone

- Lamotte Sandstone

- Diabase (dikes and sills)

- St. Francois Mountains Intrusive Suite

- St. Francois Mountains Volcanic Supergroup

REGIONAL GEOLOGIC MAP

GOOSE CREEK LAKE DAM

MO 30297 | Fig. 4

APPENDIX A

Photographs

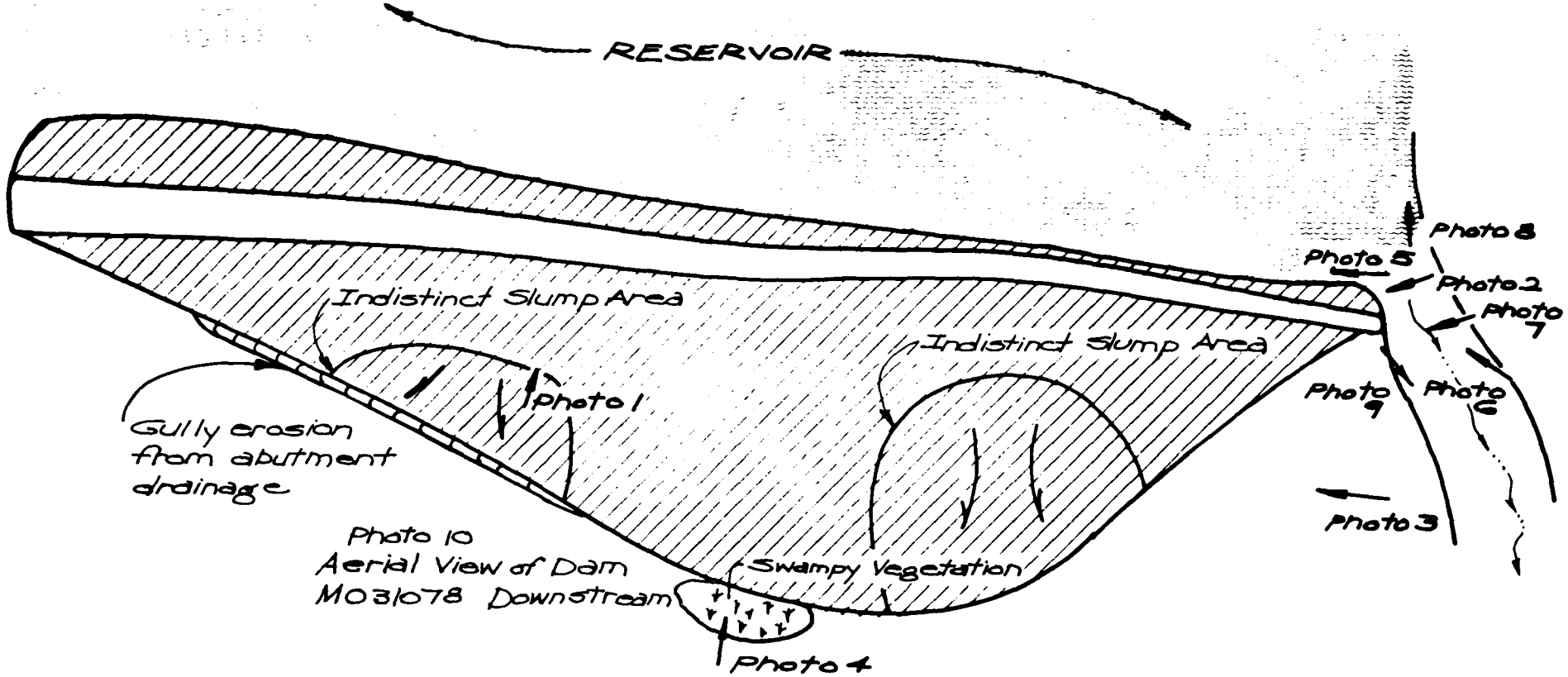


Photo 11
Aerial View of
Portion of Downstream
Hazard Zone

0 60 120
scale, ft

PHOTO LOCATION SKETCH

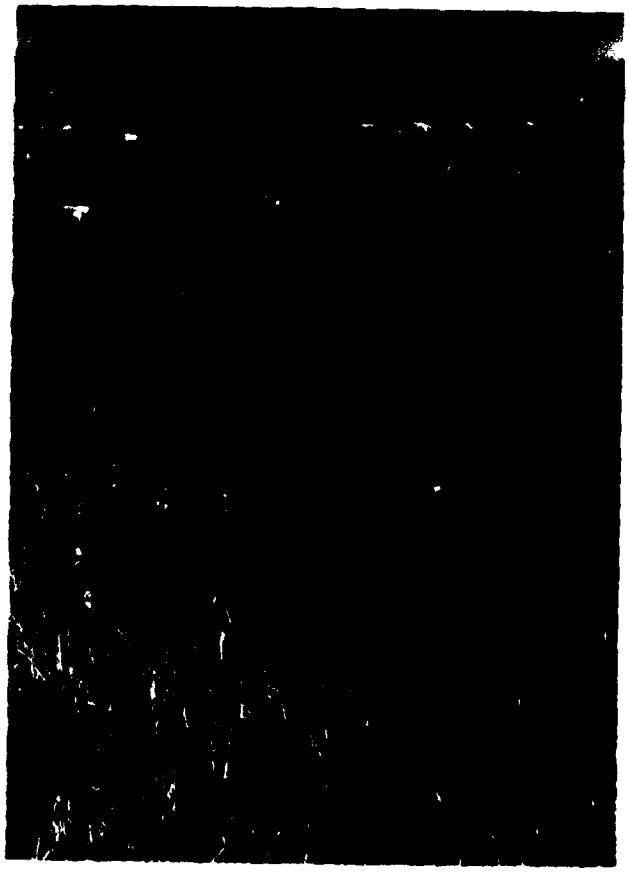
GOOSE CREEK LAKE DAM

MO 30297 | Fig. A-1

1. Clay and silt soil with gravel to cobble and boulder-size rock fragments, used in the embankment construction.

2. Fault exposed in spillway cut. Fault dips vertically, strikes N55^{o}W, separates white quartzite with thin soil cover on the right from dolomite with thick red-brown soil cover on the left.

3. Downstream slope of dam showing grass, weed and small tree vegetation. Note scattered boulders in embankment fill and downhill inclination of some trees. Looking south from left abutment.



4. Downstream slope and toe of dam showing cattail vegetation at toe, lush green vegetation on toe of dam, and boulders in embankment fill. Looking west, upstream.

5. View of upstream slope of dam. Note slight dip in dam crest near center. Note also rocky fill on near half of dam, apparently added to raise dam crest. High water line, far side of dam, has not become well-defined on new material. Looking south-southeast from entrance of spillway.

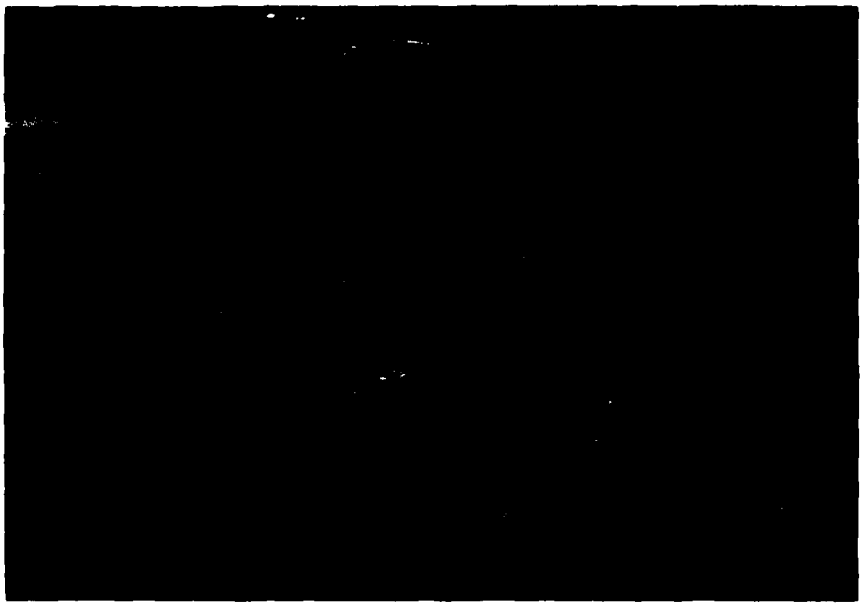
6. Spillway excavated at left (north) end of dam. Note remnants of concrete spillway weir in front of observer. Looking southwest from left bank of discharge channel.

7. Remnants of concrete spillway weir shown in Photo 6. Reservoir is out of picture to the right. Downstream channel flows to the left.

8. Steep rocky slopes which surround portions of the reservoir. Looking northwest from the entrance of spillway.

9. Downstream discharge channel. Note small soil slumps along portions of the banks of the channel. Looking east, downstream.

10. Dam (MO 31078) under construction downstream from Goose Creek Dam. Looking west.



11. Typical contents of downstream damage zone.

APPENDIX B

Hydraulic/Hydrologic Data and Analyses

APPENDIX B
Hydraulic/Hydrologic Data and Analyses

B.1 Procedures

a. General. The hydraulic/hydrologic analyses were performed using the "HEC-1, Dam Safety Version (1 Apr 80)" computer program. The inflow hydrographs were developed for various precipitation events by applying them to a synthetic unit hydrograph. The inflow hydrographs were subsequently routed through the reservoir and appurtenant structures by the modified Puls reservoir routing option.

b. Precipitation events. The Probable Maximum Precipitation (PMP) and the 1 and 10 percent probability-of-occurrence events were used in the analyses. The total rainfall and corresponding distributions for the 1 and 10 percent probability events were provided by the St. Louis District, Corps of Engineers. The Probable Maximum Precipitation was determined from regional curves prepared by the US Weather Bureau (Hydrometeorological Report Number 33, 1956). The Probable Maximum Precipitation distribution was computed by the HEC-1 program using standard EM-1110-1411 method.

c. Unit hydrograph. The Soil Conservation Services (SCS) Dimensionless Unit Hydrograph method (SCS, 1971, Hydrology: National Engineering Handbook, Section 4) was used in the analysis. This method was selected because of its simplicity, applicability to drainage areas less than 10 mi^2, and its easy availability within the HEC-1 computer program. The total drainage basin was divided into two sub-basins, consisting of Goose Creek and a tributary drainage (Fig. 2).

The watershed lag time was computed using the SCS "curve number method" by an empirical relationship as follows:

$$L = \frac{\ell^{0.8}\,(s+1)^{0.7}}{1900\,Y^{0.5}} \qquad \text{(Equation 15-4)}$$

where: L = lag in hours
ℓ = hydraulic length of the watershed in feet = 14,400 (Goose Creek); 8,400(tributary).
$s = \frac{1000}{CN} - 10 = 4.93$
CN = hydrologic soil curve number for AMC II.
Y = average watershed land slope in percent = 5.7 (Goose Creek); 16 (tributary).

This empirical relationship accounts for the soil cover, average watershed slope and hydraulic length.

With the lag time thus computed, another empirical relationship is used to compute the time of concentration as follows:

$$T_C = \frac{L}{0.6} \qquad \text{(Equation 15-3)}$$

where: T_C = time of concentration in hours

L = lag in hours.

Subsequent to the computation of the time of concentration, the unit hydrograph duration was approximated utilizing the following relationship:

$$\Delta D = 0.133 T_C \qquad \text{(Equation 16-12)}$$

where: ΔD = duration of unit excess rainfall
T_C = time of concentration in hours.

The final duration was selected to provide at least three discharge ordinates prior to the peak discharge ordinate of the unit hydrograph. For this dam, the unit hydrograph duration of 10 minutes was used.

d. Infiltration losses. The infiltration losses were computed by the HEC-1 computer program internally using the SCS loss function. The curve number of SCS loss rate procedure was established taking into consideration the variables of: (a) antecedent moisture condition, (b) hydrologic soil group classification, (c) vegetative cover, and (d) present land usage in the watershed. In addition, the computed basin loss was reduced proportional to the impervious area in the drainage basin.

Antecedent moisture condition III (AMC III) was used for the PMF events and AMC II was used for the 1 and 10 percent probability events, in accordance with the guidelines. The remaining variables are defined in the SCS procedure and judgements in their selection were made on the basis of visual field inspection.

e. Starting elevations. Reservoir starting water surface elevations for this dam were set as follows:

(1) 1 and 10 percent probability events - spillway crest elevation 744.7 ft

(2) Probable Maximum Storm - spillway crest elevation 744.7 ft

f. Spillway Rating Curve. The HEC-2 computer program was used to compute the spillway rating curve using discharge channel cross sections and conveyance characteristics. The HEC-2 backwater analysis indicated the control section is not at the spillway but in the discharge channel at Section E-E, Fig. 3-B, at the head of a 5-ft waterfall. Manning's "N" for spillway assumed to be 0.03.

B.2 Pertinent Data

a. Drainage area. 4.8 mi^2 (includes 3.8 mi^2 for Goose Creek drainage; 1.0 mi^2 for tributary drainage).

b. Storm duration. A unit hydrograph was developed by the SCS method option of HEC-1 program. The design storm of 48 hours duration was divided into equal intervals equal to the unit hydrograph duration of 10 minutes (Section B.1c) in order to develop the inflow hydrograph.

c. Lag time. 1.6 hr (Goose Creek drainage)
.6 hr (Tributary drainage)

d. Hydrologic soil group. B and C

e. SCS curve numbers.

1. For PMF- AMC III - Curve Number 83 (for both basins)
2. For 1 and 10 percent probability-of-occurrence events - AMC II - Curve Number 67

f. Storage. Elevation-area data were developed by planimetering areas at various elevation contours on the USGS Lawrenceton and French Village (1964) 7.5 minute quadrangle maps. The data were entered on the $A and $E cards so that the HEC-1 program could compute storage volumes.

g. Outflow over dam crest. As the profile of the dam crest is irregular, flow over the crest was computed according to the "Flow Over Non-Level Dam Crest" supplement to the HEC-1 User's Manual. The crest length-elevation data and hydraulic constants were entered on the $D, $L, and $V cards.

h. Outflow capacity. The spillway rating curve was developed from the cross section data of the downstream channel, using the HEC-2 backwater program. The controlling section for discharge is downstream of the spillway, at Section E-E on Fig. 3-B. The results of the above were entered on the Y4 and Y5 cards of the HEC-1 program.

i. Reservoir elevations. For the 50 and 100 percent of the PMF events, the starting reservoir elevation was 744.7 ft, the spillway crest elevation. For the 1 and 10 percent probability-of-occurrence events, the starting reservoir elevation was also 744.7 ft, the spillway crest elevation.

B.3 Results

The results of the analyses as well as the input values to the HEC-1 program follow in this Appendix. Only the results summaries are included, not the intermediate output. Complete copies of the HEC-1 output are available in the project files.

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION  JULY 1978
 LAST MODIFICATION  01 APR 80
**********
     1          A1    GOOSE CREEK LAKE DAM NO. 30297
     2          A2    WOODWARD-CLYDE CONSULTANTS, HOUSTON JOB 80C224T100.
     3          A3    PROBABLE MAXIMUM FLOOD ANALYSIS (PMF)
     4          B   240    0    10    0    0    0    0    0    0    0    0
     5          B1   5
     6          J    1    2    1
     7          J1  .50  1.0
     8          K    0  INFL01                                   1
     9          K1    GOOSE CREEK INFLOW HYDROGRAPH
    10          M    1    2  3.79                          1.0
    11          P    0.  26.  102.  120.  130.  140.
    12          T                                          -1   -83          .03
    13          M2        1.6
    14          X   -1   -.05    5
    15          K    0  INFL02                                   1
    16          K1    TRIBUTARY INFLOW FLOOD HYDROGRAPH
    17          M    1    2   1.                          1.0
    18          P    0.  26.  102.  120.  130.  140.
    19          T                                          -1   -83          .03
    20          M2        .63
    21          X   -1   -.05    5
    22          K    2  INFLOW                                   1
    23          K1    COMBINE GOOSE CREEK AND TRIBUTARY FLOW
    24          K    1    DAM                                    1
    25          K1    FLOOD ROUTING AND OVERTOPPING ANALYSIS
    26          Y                              1
    27          Y1   1                                      -744.7   -1
    28          Y4 744.7  746.1  746.5  747.2  748.1  749.0  749.6  751.5  753.6  755.0
    29          Y4 758.5
    30          Y5   0.   50.0  100.0  200.0  400.0  600.0  800.0 1500.0 2500.0 4000.0
    31          Y56000.0
    32          SA   1.    7.0   16.0   36.0   63.0   68.0   98.0  105.   149.0
    33          SE 700.0  710.0  720.0  730.0  740.0  741.7  750.0  752.3  760.0
    34          SS744.7
    35          SD 752.3    2.8    1.5
    36          SL   0.  205.0  385.0  500.0  565.0  609.0
    37          SV 752.3  753.2  754.1  754.5  754.8  756.8
    38          K   99
```

Input Data
Various PMF Events
Goose Creek Lake Dam
MO 30297
B4

```
**********    ********************
FLOOD HYDRO   H PACKAGE (HEC-1)
DAM SAFETY VERSION     JULY 1978
 LAST MODIFICATION  01 APR 80
**********************************

RUN  DATE? 81/05/27.
     TIME? 12.30.45.


                    GOOSE CREEK LAKE DAM NO. 30297
                    WOODWARD-CLYDE CONSULTANTS, HOUSTON JOB 80C224T100.
                    PROBABLE MAXIMUM FLOOD ANALYSIS (PMF)

                                 JOB SPECIFICATION
          NO      NHR     NMIN     IDAY      IHR     IMIN    METRC     IPLT     IPRT    NSTAN
         200        0       10        0        0        0        0        0        0        0
                                   JOPER      NWT    LROPT    TRACE
                                       5        0        0        0

                          MULTI-PLAN ANALYSES TO BE PERFORMED
                                NPLAN= 1 NRTIO= 2 LRTIO= 1
               RTIOS=     .50    1.00

**********          **********          **********          **********          **********

                          SUB-AREA RUNOFF COMPUTATION

                    GOOSE CREEK INFLOW HYDROGRAPH

                          ISTAO   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                         INFLOW       0       0       0       0       0       1       0       0

                                 HYDROGRAPH DATA
          IHYDG    IUHG   TAREA    SNAP   TRSDA   TRSPC   RATIO   ISNOW   ISAME   LOCAL
              1       2    3.78    0.00    3.78    1.00   0.000       0       0       0

                                  PRECIP DATA
                SPFE      PMS       R6      R12      R24      R48      R72      R96
                0.00    26.00   102.00   120.00   130.00   140.00     0.00     0.00

                                   LOSS DATA
          LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
              0    0.00    0.00    1.00    0.00    0.00    1.00   -1.00  -83.00    0.00     .03

          CURVE NO =  -83.00  WETNESS =   -1.00  EFFECT CN =   83.00

                                UNIT HYDROGRAPH DATA
                             TC=  0.00    LAG=  1.60

                                RECESSION DATA
                          STRTQ=   -1.00    QRCSN=   -.05    RTIOR= 5.00

     UNIT HYDROGRAPH 50 END OF PERIOD ORDINATES, TC=    0.00 HOURS, LAG=    1.60  VOL= 1.00
       32.     107.     203.     331.     501.     703.     877.     999.    1068.    1083.
     1075.    1016.     942.     859.     753.     628.     517.     436.     370.     314.
      272.     233.     199.     167.     143.     122.     104.      88.      75.      63.
       54.      46.      39.      33.      29.      24.      21.      17.      15.      13.
       11.      10.       9.       7.       6.       5.       4.       3.       2.       1.

 0                                END-OF-PERIOD FLOW
```

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
B5

	54.	46.	39.	33.	29.	24.	21.	17.	15.	13.				
	11.	10.	9.	7.	6.	5.	4.	3.	2.	1.				

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.10	1	.00	.00	.00	3.	1.02	.20	146	.03	.02	.01	43.
1.01	.20	2	.00	.00	.00	3.	1.02	.30	147	.03	.02	.01	46.
1.01	.30	3	.00	.00	.00	2.	1.02	.40	148	.03	.02	.01	52.
1.01	.40	4	.00	.00	.00	2.	1.02	.50	149	.03	.02	.01	62.
1.01	.50	5	.00	.00	.00	2.	1.02	1.00	150	.03	.02	.01	76.
1.01	1.00	6	.00	.00	.00	2.	1.02	1.10	151	.03	.02	.01	93.
1.01	1.10	7	.00	.00	.00	1.	1.02	1.20	152	.03	.02	.01	113.
1.01	1.20	8	.00	.00	.00	1.	1.02	1.30	153	.03	.02	.01	134.
1.01	1.30	9	.00	.00	.00	1.	1.02	1.40	154	.03	.02	.01	156.
1.01	1.40	10	.00	.00	.00	1.	1.02	1.50	155	.03	.02	.01	179.
1.01	1.50	11	.00	.00	.00	1.	1.02	2.00	156	.03	.02	.01	198.
1.01	2.00	12	.00	.00	.00	1.	1.02	2.10	157	.03	.02	.01	219.
1.01	2.10	13	.00	.00	.00	1.	1.02	2.20	158	.03	.02	.01	235.
1.01	2.20	14	.00	.00	.00	1.	1.02	2.30	159	.03	.02	.01	251.
1.01	2.30	15	.00	.00	.00	1.	1.02	2.40	160	.03	.02	.01	264.
1.01	2.40	16	.00	.00	.00	1.	1.02	2.50	161	.03	.02	.01	276.
1.01	2.50	17	.00	.00	.00	1.	1.02	3.00	162	.03	.02	.01	285.
1.01	3.00	18	.00	.00	.00	1.	1.02	3.10	163	.03	.02	.01	293.
1.01	3.10	19	.00	.00	.00	1.	1.02	3.20	164	.03	.02	.01	301.
1.01	3.20	20	.00	.00	.00	1.	1.02	3.30	165	.03	.02	.01	307.
1.01	3.30	21	.00	.00	.00	1.	1.02	3.40	166	.03	.02	.00	312.
1.01	3.40	22	.00	.00	.00	1.	1.02	3.50	167	.03	.02	.00	317.
1.01	3.50	23	.00	.00	.00	1.	1.02	4.00	168	.03	.02	.00	322.
1.01	4.00	24	.00	.00	.00	1.	1.02	4.10	169	.03	.02	.00	325.
1.01	4.10	25	.00	.00	.00	1.	1.02	4.20	170	.03	.02	.00	329.
1.01	4.20	26	.00	.00	.00	1.	1.02	4.30	171	.03	.02	.00	332.
1.01	4.30	27	.00	.00	.00	1.	1.02	4.40	172	.03	.02	.00	334.
1.01	4.40	28	.00	.00	.00	1.	1.02	4.50	173	.03	.02	.00	337.
1.01	4.50	29	.00	.00	.00	1.	1.02	5.00	174	.03	.02	.00	339.
1.01	5.00	30	.00	.00	.00	1.	1.02	5.10	175	.03	.02	.00	341.
1.01	5.10	31	.00	.00	.00	1.	1.02	5.20	176	.03	.02	.00	343.
1.01	5.20	32	.00	.00	.00	1.	1.02	5.30	177	.03	.02	.00	344.
1.01	5.30	33	.00	.00	.00	1.	1.02	5.40	178	.03	.02	.00	346.
1.01	5.40	34	.00	.00	.00	1.	1.02	5.50	179	.03	.02	.00	347.
1.01	5.50	35	.00	.00	.00	1.	1.02	6.00	180	.03	.02	.00	349.
1.01	6.00	36	.00	.00	.00	1.	1.02	6.10	181	.13	.11	.02	353.
1.01	6.10	37	.01	.00	.01	1.	1.02	6.20	182	.13	.11	.02	363.
1.01	6.20	38	.01	.00	.01	1.	1.02	6.30	183	.13	.11	.02	382.
1.01	6.30	39	.01	.00	.01	1.	1.02	6.40	184	.13	.11	.02	412.
1.01	6.40	40	.01	.00	.01	1.	1.02	6.50	185	.13	.11	.02	457.
1.01	6.50	41	.01	.00	.01	1.	1.02	7.00	186	.13	.12	.01	520.
1.01	7.00	42	.01	.00	.01	1.	1.02	7.10	187	.13	.12	.01	598.
1.01	7.10	43	.01	.00	.01	2.	1.02	7.20	188	.13	.12	.01	688.
1.01	7.20	44	.01	.00	.01	2.	1.02	7.30	189	.13	.12	.01	784.
1.01	7.30	45	.01	.00	.01	2.	1.02	7.40	190	.13	.12	.01	882.
1.01	7.40	46	.01	.00	.01	2.	1.02	7.50	191	.13	.12	.01	981.
1.01	7.50	47	.01	.00	.01	3.	1.02	8.00	192	.13	.12	.01	1074.
1.01	8.00	48	.01	.00	.01	3.	1.02	8.10	193	.13	.12	.01	1162.
1.01	8.10	49	.01	.00	.01	3.	1.02	8.20	194	.13	.12	.01	1243.
1.01	8.20	50	.01	.00	.01	3.	1.02	8.30	195	.13	.12	.01	1315.
1.01	8.30	51	.01	.00	.01	3.	1.02	8.40	196	.13	.12	.01	1376.
1.01	8.40	52	.01	.00	.01	4.	1.02	8.50	197	.13	.12	.01	1428.
1.01	8.50	53	.01	.00	.01	4.	1.02	9.00	198	.13	.12	.01	1472.
1.01	9.00	54	.01	.00	.01	4.	1.02	9.10	199	.13	.12	.01	1511.
1.01	9.10	55	.01	.00	.01	4.	1.02	9.20	200	.13	.12	.01	1546.
1.01	9.20	56	.01	.00	.01	4.	1.02	9.30	201	.13	.12	.01	1576.
1.01	9.30	57	.01	.00	.01	4.	1.02	9.40	202	.13	.12	.01	1602.
1.01	9.40	58	.01	.00	.01	4.	1.02	9.50	203	.13	.12	.01	1626.
1.01	9.50	59	.01	.00	.01	4.	1.02	10.00	204	.13	.12	.01	1647.

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
B6

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
B7

1	7.30	45	.01	.00	.01	2.	1.02	7.40	190	.13	.12	.01	887.
1.	7.40	46	.01	.00	.01	2.	1.02	7.50	191	.13	.12	.01	981.
1.01	7.50	47	.01	.00	.01	3.	1.02	8.00	192	.13	.12	.01	1074.
1.01	8.00	48	.01	.00	.01	3.	1.02	8.10	193	.13	.12	.01	1162.
1.01	8.10	49	.01	.00	.01	3.	1.02	8.20	194	.13	.12	.01	1243.
1.01	8.20	50	.01	.00	.01	3.	1.02	8.30	195	.13	.12	.01	1318.
1.01	8.30	51	.01	.00	.01	3.	1.02	8.40	196	.13	.12	.01	1376.
1.01	8.40	52	.01	.00	.01	4.	1.02	8.50	197	.13	.12	.01	1428.
1.01	8.50	53	.01	.00	.01	4.	1.02	9.00	198	.13	.12	.01	1472.
1.01	9.00	54	.01	.00	.01	4.	1.02	9.10	199	.13	.12	.01	1511.
1.01	9.10	55	.01	.00	.01	4.	1.02	9.20	200	.13	.12	.01	1546.
1.01	9.20	56	.01	.00	.01	4.	1.02	9.30	201	.13	.12	.01	1576.
1.01	9.30	57	.01	.00	.01	4.	1.02	9.40	202	.13	.12	.01	1602.
1.01	9.40	58	.01	.00	.01	4.	1.02	9.50	203	.13	.12	.01	1626.
1.01	9.50	59	.01	.00	.01	4.	1.02	10.00	204	.13	.12	.01	1647.
1.01	10.00	60	.01	.00	.01	4.	1.02	10.10	205	.13	.12	.01	1665.
1.01	10.10	61	.01	.00	.01	4.	1.02	10.20	206	.13	.12	.01	1681.
1.01	10.20	62	.01	.00	.01	4.	1.02	10.30	207	.13	.12	.01	1696.
1.01	10.30	63	.01	.00	.01	4.	1.02	10.40	208	.13	.12	.01	1709.
1.01	10.40	64	.01	.00	.01	4.	1.02	10.50	209	.13	.12	.01	1720.
1.01	10.50	65	.01	.00	.01	4.	1.02	11.00	210	.13	.12	.01	1730.
1.01	11.00	66	.01	.00	.01	4.	1.02	11.10	211	.13	.12	.01	1740.
1.01	11.10	67	.01	.00	.01	4.	1.02	11.20	212	.13	.12	.01	1748.
1.01	11.20	68	.01	.00	.01	4.	1.02	11.30	213	.13	.12	.01	1756.
1.01	11.30	69	.01	.00	.01	4.	1.02	11.40	214	.13	.12	.01	1763.
1.01	11.40	70	.01	.00	.01	4.	1.02	11.50	215	.13	.12	.01	1769.
1.01	11.50	71	.01	.00	.01	4.	1.02	12.00	216	.13	.12	.01	1775.
1.01	12.00	72	.01	.00	.01	4.	1.02	12.10	217	.44	.42	.02	1790.
1.01	12.10	73	.03	.00	.03	5.	1.02	12.20	218	.44	.43	.02	1827.
1.01	12.20	74	.03	.00	.03	5.	1.02	12.30	219	.44	.43	.01	1909.
1.01	12.30	75	.03	.00	.03	5.	1.02	12.40	220	.44	.43	.01	1997.
1.01	12.40	76	.03	.01	.03	7.	1.02	12.50	221	.44	.43	.01	2152.
1.01	12.50	77	.03	.01	.03	8.	1.02	13.00	222	.44	.43	.01	2368.
1.01	13.00	78	.03	.01	.03	11.	1.02	13.10	223	.53	.52	.01	2639.
1.01	13.10	79	.04	.01	.03	15.	1.02	13.20	224	.53	.52	.01	2954.
1.01	13.20	80	.04	.01	.03	20.	1.02	13.30	225	.53	.52	.01	3299.
1.01	13.30	81	.04	.01	.03	26.	1.02	13.40	226	.53	.52	.01	3660.
1.01	13.40	82	.04	.01	.03	33.	1.02	13.50	227	.53	.52	.01	4034.
1.01	13.50	83	.04	.01	.03	42.	1.02	14.00	228	.53	.52	.01	4409.
1.01	14.00	84	.04	.01	.03	52.	1.02	14.10	229	.66	.65	.01	4781.
1.01	14.10	85	.05	.02	.03	63.	1.02	14.20	230	.66	.65	.01	5148.
1.01	14.20	86	.05	.02	.03	75.	1.02	14.30	231	.66	.65	.01	5503.
1.01	14.30	87	.05	.02	.03	88.	1.02	14.40	232	.66	.65	.01	5839.
1.01	14.40	88	.05	.02	.03	103.	1.02	14.50	233	.66	.66	.01	6163.
1.01	14.50	89	.05	.02	.03	118.	1.02	15.00	234	.66	.66	.01	6484.
1.01	15.00	90	.05	.02	.03	134.	1.02	15.10	235	.60	.60	.01	6800.
1.01	15.10	91	.05	.02	.02	152.	1.02	15.20	236	1.01	1.00	.01	7116.
1.01	15.20	92	.08	.04	.04	170.	1.02	15.30	237	1.81	1.80	.01	7469.
1.01	15.30	93	.14	.08	.06	191.	1.02	15.40	238	4.53	4.51	.03	7980.
1.01	15.40	94	.35	.22	.13	221.	1.02	15.50	239	1.31	1.30	.01	8687.
1.01	15.50	95	.10	.07	.03	261.	1.02	16.00	240	.81	.80	.00	9522.
1.01	16.00	96	.06	.04	.02	309.	1.02	16.10	241	.62	.62	.00	10557.
1.01	16.10	97	.05	.03	.01	367.	1.02	16.20	242	.62	.62	.00	11771.
1.01	16.20	98	.05	.03	.01	435.	1.02	16.30	243	.62	.62	.00	13063.
1.01	16.30	99	.05	.03	.01	509.	1.02	16.40	244	.62	.62	.00	14375.
1.01	16.40	100	.05	.03	.01	575.	1.02	16.50	245	.62	.62	.00	14963.
1.01	16.50	101	.05	.03	.01	627.	1.02	17.00	246	.62	.62	.00	15417.
1.01	17.00	102	.05	.03	.01	664.	1.02	17.10	247	.49	.48	.00	15555.
1.01	17.10	103	.04	.03	.01	686.	1.02	17.20	248	.49	.48	.00	15470.
1.01	17.20	104	.04	.03	.01	697.	1.02	17.30	249	.49	.48	.00	15124.
1.01	17.30	105	.04	.03	.01	694.	1.02	17.40	250	.49	.48	.00	14639.
1.01	17.40	106	.04	.03	.01	684.	1.02	17.50	251	.49	.49	.00	14036.
1.01	17.50	107	.04	.03	.01	667.	1.02	18.00	252	.49	.48	.00	13356.
1.01	18.00	108	.04	.03	.01	642.	1.02	18.10	253	.04	.04	.00	12446.
1.01	18.10	109	.00	.00	.00	611.	1.02	18.20	254	.04	.04	.00	11624.

1.	17.40	106	.04	.03	.01	644.	1.02	17.50	251	.49	.48	.00	13296.
1.	17.50	107	.04	.03	.01	667.	1.02	18.00	252	.49	.48	.00	13296.
1.01	18.00	108	.04	.03	.01	642.	1.02	18.10	253	.04	.04	.00	12446.
1.01	18.10	109	.00	.00	.00	611.	1.02	18.20	254	.04	.04	.00	11624.
1.01	18.20	110	.00	.00	.00	579.	1.02	18.30	255	.04	.04	.00	10894.
1.01	18.30	111	.00	.00	.00	550.	1.02	18.40	256	.04	.04	.00	10200.
1.01	18.40	112	.00	.00	.00	521.	1.02	18.50	257	.04	.04	.00	9504.
1.01	18.50	113	.00	.00	.00	491.	1.02	19.00	258	.04	.04	.00	8794.
1.01	19.00	114	.00	.00	.00	458.	1.02	19.10	259	.04	.04	.00	8046.
1.01	19.10	115	.00	.00	.00	422.	1.02	19.20	260	.04	.04	.00	7284.
1.01	19.20	116	.00	.00	.00	385.	1.02	19.30	261	.04	.04	.00	6526.
1.01	19.30	117	.00	.00	.00	347.	1.02	19.40	262	.04	.04	.00	5815.
1.01	19.40	118	.00	.00	.00	310.	1.02	19.50	263	.04	.04	.00	5143.
1.01	19.50	119	.00	.00	.00	275.	1.02	20.00	264	.04	.04	.00	4529.
1.01	20.00	120	.00	.00	.00	243.	1.02	20.10	265	.04	.04	.00	3968.
1.01	20.10	121	.00	.00	.00	214.	1.02	20.20	266	.04	.04	.00	3467.
1.01	20.20	122	.00	.00	.00	187.	1.02	20.30	267	.04	.04	.00	3020.
1.01	20.30	123	.00	.00	.00	164.	1.02	20.40	268	.04	.04	.00	2663.
1.01	20.40	124	.00	.00	.00	145.	1.02	20.50	269	.04	.04	.00	2359.
1.01	20.50	125	.00	.00	.00	129.	1.02	21.00	270	.04	.04	.00	2104.
1.01	21.00	126	.00	.00	.00	115.	1.02	21.10	271	.04	.04	.00	1886.
1.01	21.10	127	.00	.00	.00	104.	1.02	21.20	272	.04	.04	.00	1701.
1.01	21.20	128	.00	.00	.00	94.	1.02	21.30	273	.04	.04	.00	1541.
1.01	21.30	129	.00	.00	.00	86.	1.02	21.40	274	.04	.04	.00	1404.
1.01	21.40	130	.00	.00	.00	78.	1.02	21.50	275	.04	.04	.00	1286.
1.01	21.50	131	.00	.00	.00	72.	1.02	22.00	276	.04	.04	.00	1188.
1.01	22.00	132	.00	.00	.00	67.	1.02	22.10	277	.04	.04	.00	1105.
1.01	22.10	133	.00	.00	.00	63.	1.02	22.20	278	.04	.04	.00	1035.
1.01	22.20	134	.00	.00	.00	59.	1.02	22.30	279	.04	.04	.00	975.
1.01	22.30	135	.00	.00	.00	56.	1.02	22.40	280	.04	.04	.00	923.
1.01	22.40	136	.00	.00	.00	53.	1.02	22.50	281	.04	.04	.00	878.
1.01	22.50	137	.00	.00	.00	51.	1.02	23.00	282	.04	.04	.00	839.
1.01	23.00	138	.00	.00	.00	49.	1.02	23.10	283	.04	.04	.00	805.
1.01	23.10	139	.00	.00	.00	47.	1.02	23.20	284	.04	.04	.00	775.
1.01	23.20	140	.00	.00	.00	45.	1.02	23.30	285	.04	.04	.00	749.
1.01	23.30	141	.00	.00	.00	44.	1.02	23.40	286	.04	.04	.00	726.
1.01	23.40	142	.00	.00	.00	43.	1.02	23.50	287	.04	.04	.00	706.
1.01	23.50	143	.00	.00	.00	42.	1.03	0.00	288	.04	.04	.00	691.
1.02	0.00	144	.00	.00	.00	41.	1.03	.10	289	0.00	0.00	0.00	679.
1.02	.10	145	.03	.02	.01	41.	1.03	.20	290	0.00	0.00	0.00	666.
									SUM	36.40	34.12	2.28	492693.
										(925.1(	867.1(	58.1(	13951.9(

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	15555.	9731.	3302.	1698.	492364.
CMS	440.	276.	94.	48.	13942.
INCHES		23.95	32.51	33.66	33.66
MM		609.27	825.70	854.90	854.90
AC-FT		4825.	6550.	6782.	6782.
THOUS CU M		5952.	8080.	8365.	8365.

HYDROGRAPH AT STAINFLOI FOR PLAN 1. RTIO 1

2.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	3.	3.	4.	6.	7.	10.
13.	17.	21.	26.	31.	37.	44.	51.	59.	67.
76.	85.	96.	110.	130.	154.	183.	217.	254.	288.

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
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SUB-AREA RUNOFF COMPUTATION

TRIBUTARY INFLOW FLOOD HYDROGRAPH

	ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	INFLO2	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUNIG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	1.00	0.00	1.00	1.00	0.000	0	0	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	26.00	102.00	120.00	130.00	140.00	0.00	0.00

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	-1.00	-83.00	0.00	.03

CURVE NO = -83.00 WETNESS = -1.00 EFFECT CN = 83.00

UNIT HYDROGRAPH DATA

TC= 0.00 LAG= .63

RECESSION DATA

STRTQ= -1.00 QRCSN= -.05 RTIOR= 5.00

UNIT HYDROGRAPH 21 END OF PERIOD ORDINATES, TC= 0.00 HOURS, LAG= .63 VOL= 1.00

88. 283. 555. 672. 642. 526. 355. 236. 164. 112.
76. 52. 35. 24. 17. 11. 8. 6. 4. 2.
1.

END-OF-PERIOD FLOW

NO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	NO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.10	1	.00	.00	.00	1.	1.02	.20	146	.03	.02	.01	87.
1.01	.20	2	.00	.00	.00	1.	1.02	.30	147	.03	.02	.01	88.
1.01	.30	3	.00	.00	.00	1.	1.02	.40	148	.03	.02	.01	89.
1.01	.40	4	.00	.00	.00	1.	1.02	.50	149	.03	.02	.01	89.
1.01	.50	5	.00	.00	.00	1.	1.02	1.00	150	.03	.02	.01	89.
1.01	1.00	6	.00	.00	.00	1.	1.02	1.10	151	.03	.02	.01	72.
1.01	1.10	7	.00	.00	.00	1.	1.02	1.20	152	.03	.02	.01	72.
1.01	1.20	8	.00	.00	.00	0.	1.02	1.30	153	.03	.02	.01	91.
1.01	1.30	9	.00	.00	.00	0.	1.02	1.40	154	.03	.02	.01	91.
1.01	1.40	10	.00	.00	.00	0.	1.02	1.50	155	.03	.02	.01	91.
1.01	1.50	11	.00	.00	.00	0.	1.02	2.00	156	.03	.02	.01	91.
1.01	2.00	12	.00	.00	.00	0.	1.02	2.10	157	.03	.02	.01	90.
1.01	2.10	13	.00	.00	.00	0.	1.02	2.20	158	.03	.02	.01	90.
1.01	2.20	14	.00	.00	.00	0.	1.02	2.30	159	.03	.02	.01	90.
1.01	2.30	15	.00	.00	.00	0.	1.02	2.40	160	.03	.02	.01	90.
1.01	2.40	16	.00	.00	.00	0.	1.02	2.50	161	.03	.02	.01	90.
1.01	2.50	17	.00	.00	.00	0.	1.02	3.00	162	.03	.02	.01	90.
1.01	3.00	18	.00	.00	.00	0.	1.02	3.10	163	.03	.02	.01	91.
1.01	3.10	19	.00	.00	.00	0.	1.02	3.20	164	.03	.02	.01	91.
1.01	3.20	20	.00	.00	.00	0.	1.02	3.30	165	.03	.02	.01	91.
1.01	3.30	21	.00	.00	.00	0.	1.02	3.40	166	.03	.02	.00	91.
1.01	3.40	22	.00	.00	.00	0.	1.02	3.50	167	.03	.02	.00	92.
1.01	3.50	23	.00	.00	.00	0.	1.02	4.00	168	.03	.02	.00	92.
1.01	4.00	24	.00	.00	.00	0.	1.02	4.10	169	.03	.02	.00	92.
1.01	4.10	25	.00	.00	.00	0.	1.02	4.20	170	.03	.02	.00	92.

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
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Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
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1.01	3.40	22	.00	.00	.00	0.	1.02	3.50	167	.03	.02	.00	92.
1	3.50	23	.00	.00	.00	0.	1.02	4.00	168	.03	.02	.00	92.
1.	4.00	24	.00	.00	.00	0.	1.02	4.10	169	.03	.02	.00	92.
1.01	4.10	25	.00	.00	.00	0.	1.02	4.20	170	.03	.02	.00	92.
1.01	4.20	26	.00	.00	.00	0.	1.02	4.30	171	.03	.02	.00	93.
1.01	4.30	27	.00	.00	.00	0.	1.02	4.40	172	.03	.02	.00	93.
1.01	4.40	28	.00	.00	.00	0.	1.02	4.50	173	.03	.02	.00	93.
1.01	4.50	29	.00	.00	.00	0.	1.02	5.00	174	.03	.02	.00	93.
1.01	5.00	30	.00	.00	.00	0.	1.02	5.10	175	.03	.02	.00	94.
1.01	5.10	31	.00	.00	.00	0.	1.02	5.20	176	.03	.02	.00	94.
1.01	5.20	32	.00	.00	.00	0.	1.02	5.30	177	.03	.02	.00	94.
1.01	5.30	33	.00	.00	.00	0.	1.02	5.40	178	.03	.02	.00	94.
1.01	5.40	34	.00	.00	.00	0.	1.02	5.50	179	.03	.02	.00	94.
1.01	5.50	35	.00	.00	.00	0.	1.02	6.00	180	.03	.02	.00	95.
1.01	6.00	36	.00	.00	.00	0.	1.02	6.10	181	.13	.11	.02	102.
1.01	6.10	37	.01	.00	.01	0.	1.02	6.20	182	.13	.11	.02	123.
1.01	6.20	38	.01	.00	.01	0.	1.02	6.30	183	.13	.11	.02	176.
1.01	6.30	39	.01	.00	.01	0.	1.02	6.40	184	.13	.11	.02	239.
1.01	6.40	40	.01	.00	.01	1.	1.02	6.50	185	.13	.11	.02	298.
1.01	6.50	41	.01	.00	.01	1.	1.02	7.00	186	.13	.12	.01	340.
1.01	7.00	42	.01	.00	.01	1.	1.02	7.10	187	.13	.12	.01	373.
1.01	7.10	43	.01	.00	.01	1.	1.02	7.20	188	.13	.12	.01	399.
1.01	7.20	44	.01	.00	.01	1.	1.02	7.30	189	.13	.12	.01	412.
1.01	7.30	45	.01	.00	.01	1.	1.02	7.40	190	.13	.12	.01	424.
1.01	7.40	46	.01	.00	.01	1.	1.02	7.50	191	.13	.12	.01	433.
1.01	7.50	47	.01	.00	.01	1.	1.02	8.00	192	.13	.12	.01	440.
1.01	8.00	48	.01	.00	.01	1.	1.02	8.10	193	.13	.12	.01	445.
1.01	8.10	49	.01	.00	.01	1.	1.02	8.20	194	.13	.12	.01	449.
1.01	8.20	50	.01	.00	.01	1.	1.02	8.30	195	.13	.12	.01	453.
1.01	8.30	51	.01	.00	.01	1.	1.02	8.40	196	.13	.12	.01	455.
1.01	8.40	52	.01	.00	.01	1.	1.02	8.50	197	.13	.12	.01	458.
1.01	8.50	53	.01	.00	.01	1.	1.02	9.00	198	.13	.12	.01	460.
1.01	9.00	54	.01	.00	.01	1.	1.02	9.10	199	.13	.12	.01	462.
1.01	9.10	55	.01	.00	.01	1.	1.02	9.20	200	.13	.12	.01	463.
1.01	9.20	56	.01	.00	.01	1.	1.02	9.30	201	.13	.12	.01	465.
1.01	9.30	57	.01	.00	.01	1.	1.02	9.40	202	.13	.12	.01	466.
1.01	9.40	58	.01	.00	.01	1.	1.02	9.50	203	.13	.12	.01	468.
1.01	9.50	59	.01	.00	.01	1.	1.02	10.00	204	.13	.12	.01	469.
1.01	10.00	60	.01	.00	.01	1.	1.02	10.10	205	.13	.12	.01	470.
1.01	10.10	61	.01	.00	.01	1.	1.02	10.20	206	.13	.12	.01	471.
1.01	10.20	62	.01	.00	.01	1.	1.02	10.30	207	.13	.12	.01	472.
1.01	10.30	63	.01	.00	.01	1.	1.02	10.40	208	.13	.12	.01	473.
1.01	10.40	64	.01	.00	.01	1.	1.02	10.50	209	.13	.12	.01	474.
1.01	10.50	65	.01	.00	.01	1.	1.02	11.00	210	.13	.12	.01	475.
1.01	11.00	66	.01	.00	.01	1.	1.02	11.10	211	.13	.12	.01	476.
1.01	11.10	67	.01	.00	.01	1.	1.02	11.20	212	.13	.12	.01	476.
1.01	11.20	68	.01	.00	.01	1.	1.02	11.30	213	.13	.12	.01	477.
1.01	11.30	69	.01	.00	.01	1.	1.02	11.40	214	.13	.12	.01	478.
1.01	11.40	70	.01	.00	.01	1.	1.02	11.50	215	.13	.12	.01	479.
1.01	11.50	71	.01	.00	.01	1.	1.02	12.00	216	.13	.12	.01	479.
1.01	12.00	72	.01	.00	.01	1.	1.02	12.10	217	.44	.42	.02	506.
1.01	12.10	73	.03	.00	.03	2.	1.02	12.20	218	.44	.43	.02	592.
1.01	12.20	74	.03	.00	.03	2.	1.02	12.30	219	.44	.43	.01	760.
1.01	12.30	75	.03	.00	.03	4.	1.02	12.40	220	.44	.43	.01	983.
1.01	12.40	76	.03	.01	.03	6.	1.02	12.50	221	.44	.43	.01	1190.
1.01	12.50	77	.03	.01	.03	9.	1.02	13.00	222	.44	.43	.01	1319.
1.01	13.00	78	.03	.01	.03	12.	1.02	13.10	223	.53	.52	.01	1436.
1.01	13.10	79	.04	.01	.03	16.	1.02	13.20	224	.53	.52	.01	1534.
1.01	13.20	80	.04	.01	.03	20.	1.02	13.30	225	.53	.52	.01	1619.
1.01	13.30	81	.04	.01	.03	24.	1.02	13.40	226	.53	.52	.01	1730.
1.01	13.40	82	.04	.01	.03	28.	1.02	13.50	227	.53	.52	.01	1816.
1.01	13.50	83	.04	.01	.03	33.	1.02	14.00	228	.53	.52	.01	1876.
1.01	14.00	84	.04	.01	.03	37.	1.02	14.10	229	.66	.65	.01	1932.
1.01	14.10	85	.05	.02	.03	42.	1.02	14.20	230	.66	.65	.01	2008.
1.01	14.20	86	.05	.02	.03	47.	1.02	14.30	231	.66	.65	.01	2095.
1.01	14.30	87	.05	.02	.03	53.	1.02	14.40	232	.66	.65	.01	2198.

1.01	14.10	85	.05	.02	.03	42.	1.02	14.20	230	.66	.65	.01	2088.
1.01	14.20	86	.05	.02	.03	47.	1.02	14.30	231	.66	.65	.01	2099.
1.01	14.30	87	.05	.02	.03	53.	1.02	14.40	232	.66	.65	.01	2198.
1.01	14.40	88	.05	.02	.03	60.	1.02	14.50	233	.66	.66	.01	2298.
1.01	14.50	89	.05	.02	.03	66.	1.02	15.00	234	.66	.66	.01	2372.
1.01	15.00	90	.05	.02	.03	73.	1.02	15.10	235	.60	.60	.01	2420.
1.01	15.10	91	.05	.02	.02	78.	1.02	15.20	236	1.01	1.00	.01	2474.
1.01	15.20	92	.08	.04	.04	84.	1.02	15.30	237	1.81	1.80	.01	2691.
1.01	15.30	93	.14	.08	.06	95.	1.02	15.40	238	4.53	4.51	.03	3387.
1.01	15.40	94	.35	.22	.13	129.	1.02	15.50	239	1.31	1.30	.01	4007.
1.01	15.50	95	.10	.07	.03	188.	1.02	16.00	240	.81	.80	.00	5819.
1.01	16.00	96	.06	.04	.02	257.	1.02	16.10	241	.62	.62	.00	6407.
1.01	16.10	97	.05	.03	.01	293.	1.02	16.20	242	.62	.62	.00	6215.
1.01	16.20	98	.05	.03	.01	292.	1.02	16.30	243	.62	.62	.00	5919.
1.01	16.30	99	.05	.03	.01	264.	1.02	16.40	244	.62	.62	.00	4592.
1.01	16.40	100	.05	.03	.01	225.	1.02	16.50	245	.62	.62	.00	3884.
1.01	16.50	101	.05	.03	.01	194.	1.02	17.00	246	.62	.62	.00	3415.
1.01	17.00	102	.05	.03	.01	175.	1.02	17.10	247	.49	.48	.00	3079.
1.01	17.10	103	.04	.03	.01	161.	1.02	17.20	248	.49	.48	.00	2817.
1.01	17.20	104	.04	.03	.01	150.	1.02	17.30	249	.49	.48	.00	2590.
1.01	17.30	105	.04	.03	.01	140.	1.02	17.40	250	.49	.48	.00	2398.
1.01	17.40	106	.04	.03	.01	131.	1.02	17.50	251	.49	.48	.00	2240.
1.01	17.50	107	.04	.03	.01	124.	1.02	18.00	252	.49	.48	.00	2126.
1.01	18.00	108	.04	.03	.01	119.	1.02	18.10	253	.04	.04	.00	2007.
1.01	18.10	109	.00	.00	.00	114.	1.02	18.20	254	.04	.04	.00	1829.
1.01	18.20	110	.00	.00	.00	104.	1.02	18.30	255	.04	.04	.00	1548.
1.01	18.30	111	.00	.00	.00	89.	1.02	18.40	256	.04	.04	.00	1229.
1.01	18.40	112	.00	.00	.00	70.	1.02	18.50	257	.04	.04	.00	921.
1.01	18.50	113	.00	.00	.00	53.	1.02	19.00	258	.04	.04	.00	673.
1.01	19.00	114	.00	.00	.00	39.	1.02	19.10	259	.04	.04	.00	909.
1.01	19.10	115	.00	.00	.00	29.	1.02	19.20	260	.04	.04	.00	400.
1.01	19.20	116	.00	.00	.00	23.	1.02	19.30	261	.04	.04	.00	325.
1.01	19.30	117	.00	.00	.00	19.	1.02	19.40	262	.04	.04	.00	277.
1.01	19.40	118	.00	.00	.00	16.	1.02	19.50	263	.04	.04	.00	238.
1.01	19.50	119	.00	.00	.00	14.	1.02	20.00	264	.04	.04	.00	216.
1.01	20.00	120	.00	.00	.00	13.	1.02	20.10	265	.04	.04	.00	200.
1.01	20.10	121	.00	.00	.00	12.	1.02	20.20	266	.04	.04	.00	188.
1.01	20.20	122	.00	.00	.00	11.	1.02	20.30	267	.04	.04	.00	182.
1.01	20.30	123	.00	.00	.00	11.	1.02	20.40	268	.04	.04	.00	176.
1.01	20.40	124	.00	.00	.00	10.	1.02	20.50	269	.04	.04	.00	173.
1.01	20.50	125	.00	.00	.00	10.	1.02	21.00	270	.04	.04	.00	170.
1.01	21.00	126	.00	.00	.00	10.	1.02	21.10	271	.04	.04	.00	168.
1.01	21.10	127	.00	.00	.00	10.	1.02	21.20	272	.04	.04	.00	167.
1.01	21.20	128	.00	.00	.00	10.	1.02	21.30	273	.04	.04	.00	167.
1.01	21.30	129	.00	.00	.00	10.	1.02	21.40	274	.04	.04	.00	167.
1.01	21.40	130	.00	.00	.00	10.	1.02	21.50	275	.04	.04	.00	167.
1.01	21.50	131	.00	.00	.00	10.	1.02	22.00	276	.04	.04	.00	167.
1.01	22.00	132	.00	.00	.00	10.	1.02	22.10	277	.04	.04	.00	167.
1.01	22.10	133	.00	.00	.00	10.	1.02	22.20	278	.04	.04	.00	167.
1.01	22.20	134	.00	.00	.00	10.	1.02	22.30	279	.04	.04	.00	167.
1.01	22.30	135	.00	.00	.00	10.	1.02	22.40	280	.04	.04	.00	167.
1.01	22.40	136	.00	.00	.00	10.	1.02	22.50	281	.04	.04	.00	167.
1.01	22.50	137	.00	.00	.00	10.	1.02	23.00	282	.04	.04	.00	167.
1.01	23.00	138	.00	.00	.00	10.	1.02	23.10	283	.04	.04	.00	167.
1.01	23.10	139	.00	.00	.00	10.	1.02	23.20	284	.04	.04	.00	167.
1.01	23.20	140	.00	.00	.00	10.	1.02	23.30	285	.04	.04	.00	167.
1.01	23.30	141	.00	.00	.00	10.	1.02	23.40	286	.04	.04	.00	167.
1.01	23.40	142	.00	.00	.00	10.	1.02	23.50	287	.04	.04	.00	167.
1.01	23.50	143	.00	.00	.00	10.	1.03	0.00	288	.04	.04	.00	167.
1.02	0.00	144	.00	.00	.00	10.	1.03	.10	289	0.00	0.00	0.00	169.
1.02	.10	145	.03	.02	.01	12.	1.03	.20	290	0.00	0.00	0.00	191.
									SUM	36.40	34.12	2.28	131604.
										(925.1	867.1	58.1	3728.0)

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
B11

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 .50	RATIO 2 1.00
HYDROGRAPH AT	INFLO1	3.78	1	7778.	15555.
		(9.79)		(220.24)	(440.48)
HYDROGRAPH AT	INFLO2	1.00	1	3203.	6407.
		(2.59)		(90.71)	(181.42)
2 COMBINED	INFLOW	4.78	1	9423.	18947.
		(12.38)		(266.84)	(533.68)
ROUTED TO	DAM	4.78	1	9161.	18619.
		(12.38)		(259.41)	(527.24)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1		INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
	ELEVATION	744.70	744.70	752.30
	STORAGE	1220.	1220.	1923.
	OUTFLOW	0.	0.	1881.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.50	755.62	3.32	2308.	9161.	7.00	41.33	0.00
1.00	757.39	5.09	2534.	18619.	10.33	41.17	0.00

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
B12

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 .14	RATIO 2 .15	RATIO 3 .16	RATIO 4 .17	RATIO 5 .18
HYDROGRAPH AT	INFL01	3.78	1	2178.	2333.	2489.	2644.	2800.
		(9.79)		(61.67)	(66.07)	(70.48)	(74.88)	(79.29)
HYDROGRAPH AT	INFL02	1.00	1	897.	961.	1025.	1089.	1153.
		(2.59)		(25.40)	(27.21)	(29.03)	(30.84)	(32.66)
2 COMBINED	INFLOW	4.78	1	2639.	2827.	3015.	3204.	3392.
		(12.38)		(74.72)	(80.05)	(85.39)	(90.73)	(96.06)
ROUTED TO	DAM	4.78	1	1513.	1661.	1804.	1945.	2102.
		(12.38)		(42.85)	(47.05)	(51.09)	(55.06)	(59.52)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	744.70	744.70	752.30
STORAGE	1220.	1220.	1923.
OUTFLOW	0.	0.	1881.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.14	751.53	0.00	1841.	1513.	0.00	42.83	0.00
.15	751.84	0.00	1873.	1661.	0.00	42.67	0.00
.16	752.14	0.00	1905.	1804.	0.00	42.67	0.00
.17	752.43	.13	1937.	1945.	1.17	42.67	0.00
.18	752.71	.41	1967.	2102.	2.00	42.67	0.00

Output Summary
Various PMF Events
Goose Creek Lake Dam
MO 30297
B13

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**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION     JULY 1978
 LAST MODIFICATION  01 APR 80
**********
    1                A1       GOOSE CREEK LAKE DAM NO. 30297
    2                A2       WOODWARD-CLYDE CONSULTANTS, HOUSTON JOB 80C224TL00.
    3                A3       PROBABILISTIC FLOOD 100-YEAR
    4                0   240        0       10        0        0        0        0        0        0        0
    5                B1    3
    6                K     0  INFL01                                          1
    7                K1       GOOSE CREEK INFLOW HYDROGRAPH
    8                M     0        2    3.78                          1.0
    9                0   288    8.881                        DA =    1.50
   10                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   11                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   12                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   13                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   14                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   15                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   16                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   17                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   18                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   19                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   20                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   21                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   22                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   23                01  .010     .010     .010     .010     .010     .010     .010     .010     .010     .010
   24                01  .010     .010     .010     .010     .014     .014     .014     .014     .014     .014
   25                01  .014     .014     .014     .014     .014     .014     .014     .014     .014     .014
   26                01  .014     .014     .014     .014     .014     .014     .014     .014     .014     .014
   27                01  .014     .014     .014     .014     .014     .014     .014     .014     .014     .014
   28                01  .028     .028     .028     .028     .028     .028     .028     .028     .028     .028
   29                01  .028     .028     .028     .028     .028     .028     .028     .028     .028     .028
   30                01  .028     .028     .028     .028     .028     .028     .028     .028     .028     .028
   31                01  .028     .028     .028     .028     .028     .028     .050     .050     .050     .050
   32                01  .050     .050     .050     .050     .050     .067     .067     .067     .117     .118
   33                01  .118     .280     .282     .645    1.357     .529     .281     .118     .118     .117
   34                01  .067     .067     .067     .050     .050     .050     .050     .050     .050     .050
   35                01  .050     .050     .014     .014     .014     .014     .014     .014     .014     .014
   36                01  .014     .014     .014     .014     .014     .014     .014     .014     .014     .014
   37                01  .014     .014     .014     .014     .014     .014     .014     .014     .014     .014
   38                01  .014     .014     .014     .014     .014     .014     .014     .014
   39                T                                                          -1      -67                .03
   40                M2             1.6
   41                K    -1     -.05       5
   42                K     0  INFL02                                          1
   43                K1       TRIBUTARY INFLOW FLOOD HYDROGRAPH
   44                M     0        2       1.                          1.0
   45                0  -288
   46                T                                                          -1      -67                .03
   47                M2              .63
   48                K    -1     -.05       5
   49                K     2  INFLOW                                          1
   50                K1       COMBINE GOOSE CREEK AND TRIBUTARY FLOW
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Input Data
1% Probability Event
Goose Creek Lake Dam
MO 30297
B14

Input Data
1% Probability Event
Goose Creek Lake Dam
MO 30297
B15

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K    1    DAM
K1   FLOOD ROUTING AND OVERTOPPING ANALYSIS                    1
     1
     Y1        1
     Y4 744.7  746.1  746.5  747.2  748.1  749.0  -744.7  749.6  751.5  753.6  755.9
     Y4 750.5
     Y5   0.   50.0   130.0  200.0  400.0  600.0  800.0  1500.0 2500.0 4000.0
     Y56000.0
     C4   1.    7.0   16.0   36.0   63.0   88.0   98.0   104.   109.   149.0
     SE 700.0  710.0  720.0  730.0  740.0  741.7  750.0  752.3  760.0
     SS744.7
     S0 752.3    2.0    1.5
     SL   0.   205.0  305.0  500.0  565.0  609.0
     SV 752.3  753.2  754.1  754.5  754.8  756.8
     K    99
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**********************************
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  01 APR 80
**********************************

RUN  DATE? 81/05/27.
     TIME? 12.30.43.

                    GOOSE CREEK LAKE DAM NO. 30297
                    WOODWARD-CLYDE CONSULTANTS, HOUSTON JOB 80C224T100.
                    PROBABILISTIC FLOOD 100-YEAR

                                         JOB SPECIFICATION
              NQ       NHR      NMIN      IDAY       IHR      IMIN     METRC      IPLT      IPRT     NSTAN
             290         0        10         0         0         0         0         0         0         0
                                         JOPER       NWT     LROPT     TRACE
                                             3         0         0         0


          **********          **********          **********          **********          **********

                                     SUB-AREA RUNOFF COMPUTATION

                   GOOSE CREEK INFLOW HYDROGRAPH

                         ISTAQ     ICOMP     IECON     ITAPE      JPLT      JPRT     INAME    ISTAGE     IAUTO
                        INFLO1         0         0         0         0         0         1         0         0

                                           HYDROGRAPH DATA
             IHYDG      IUHG     TAREA      SNAP     TRSDA     TRSPC     RATIO     ISNOW     ISAME     LOCAL
                 0         2      3.78      0.00      3.78      1.00     0.000         0         0         0

                                            PRECIP DATA
                                        NP     STORM       DAJ       DAK
                                       288      8.88      0.00      0.00
                                           PRECIP PATTERN
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
            .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
            .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
            .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
            .03       .03       .03       .03       .03
```

Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
B16

.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.03	.03	.03	.03	.03	.03	.05	.05	.05	.05	.05
.05	.05	.05	.05	.05	.07	.07	.07	.12	.12	.12
.12	.28	.28	.65	1.36	.53	.28	.12	.12	.12	.12
.07	.07	.07	.05	.05	.05	.05	.05	.05	.05	.05
.05	.05	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01		

LOSS DATA

LRUPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	-1.00	-67.00	0.00	.03

CURVE NO = -67.00 WETNESS = -1.00 EFFECT CN = 67.00

UNIT HYDROGRAPH DATA

TC= 0.00 LAG= 1.60

RECESSION DATA

STRTQ= -1.00 QRCSN= -.05 RTIOR= 5.00

UNIT HYDROGRAPH 50 END OF PERIOD ORDINATES. TC= 0.00 HOURS. LAG= 1.60 VOL= 1.00

32.	107.	203.	331.	501.	703.	877.	999.	1068.	1083.
1075.	1016.	942.	858.	753.	628.	517.	436.	370.	314.
272.	233.	199.	167.	143.	122.	104.	88.	75.	63.
54.	46.	39.	33.	29.	24.	21.	17.	15.	13.
11.	10.	9.	7.	6.	5.	4.	3.	2.	1.

0 END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.10	1	.01	.00	.01	3.	1.02	.20	146	.01	.00	.01	23.
1.01	.20	2	.01	.00	.01	3.	1.02	.30	147	.01	.00	.01	24.
1.01	.30	3	.01	.00	.01	2.	1.02	.40	148	.01	.00	.01	24.
1.01	.40	4	.01	.00	.01	2.	1.02	.50	149	.01	.00	.01	25.
1.01	.50	5	.01	.00	.01	2.	1.02	1.00	150	.01	.00	.01	26.
1.01	1.00	6	.01	.00	.01	2.	1.02	1.10	151	.01	.00	.01	27.
1.01	1.10	7	.01	.00	.01	2.	1.02	1.20	152	.01	.00	.01	29.
1.01	1.20	8	.01	.00	.01	2.	1.02	1.30	153	.01	.00	.01	30.
1.01	1.30	9	.01	.00	.01	2.	1.02	1.40	154	.01	.00	.01	32.
1.01	1.40	10	.01	.00	.01	3.	1.02	1.50	155	.01	.00	.01	33.
1.01	1.50	11	.01	.00	.01	3.	1.02	2.00	156	.01	.00	.01	35.
1.01	2.00	12	.01	.00	.01	3.	1.02	2.10	157	.01	.00	.01	36.
1.01	2.10	13	.01	.00	.01	3.	1.02	2.20	158	.01	.00	.01	37.
1.01	2.20	14	.01	.00	.01	3.	1.02	2.30	159	.01	.00	.01	39.
1.01	2.30	15	.01	.00	.01	4.	1.02	2.40	160	.01	.00	.01	40.
1.01	2.40	16	.01	.00	.01	4.	1.02	2.50	161	.01	.00	.01	41.
1.01	2.50	17	.01	.00	.01	4.	1.02	3.00	162	.01	.00	.01	42.
1.01	3.00	18	.01	.00	.01	4.	1.02	3.10	163	.01	.00	.01	43.
1.01	3.10	19	.01	.00	.01	4.	1.02	3.20	164	.01	.00	.01	44.
1.01	3.20	20	.01	.00	.01	4.	1.02	3.30	165	.01	.00	.01	45.
1.01	3.30	21	.01	.00	.01	4.	1.02	3.40	166	.01	.00	.01	46.
1.01	3.40	22	.01	.00	.01	4.	1.02	3.50	167	.01	.00	.01	47.
1.01	3.50	23	.01	.00	.01	4.	1.02	4.00	168	.01	.00	.01	48.
1.01	4.00	24	.01	.00	.01	4.	1.02	4.10	169	.01	.00	.01	49.
1.01	4.10	25	.01	.00	.01	4.	1.02	4.20	170	.01	.00	.01	
1.01	4.20	26	.01	.00	.01	4.	1.02	4.30					
1.01	4.30	27	.01	.00	.01								

Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
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Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
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1	14.30	87	.01	.00	.01	4.	1.02	14.40	232	.28	.18	.10	407.
1	14.40	88	.01	.00	.01	4.	1.02	14.50	233	.28	.19	.10	454.
1.01	14.50	89	.01	.00	.01	4.	1.02	15.00	234	.65	.45	.20	527.
1.01	15.00	90	.01	.00	.01	4.	1.02	15.10	235	1.36	1.03	.34	658.
1.01	15.10	91	.01	.00	.01	4.	1.02	15.20	236	.53	.42	.11	861.
1.01	15.20	92	.01	.00	.01	4.	1.02	15.30	237	.28	.23	.05	1125.
1.01	15.30	93	.01	.00	.01	4.	1.02	15.40	238	.12	.10	.02	1450.
1.01	15.40	94	.01	.00	.01	4.	1.02	15.50	239	.12	.10	.02	1834.
1.01	15.50	95	.01	.00	.01	4.	1.02	16.00	240	.12	.10	.02	2245.
1.01	16.00	96	.01	.00	.01	4.	1.02	16.10	241	.07	.06	.01	2612.
1.01	16.10	97	.01	.00	.01	4.	1.02	16.20	242	.07	.06	.01	2893.
1.01	16.20	98	.01	.00	.01	4.	1.02	16.30	243	.07	.06	.01	3069.
1.01	16.30	99	.01	.00	.01	4.	1.02	16.40	244	.05	.04	.01	3143.
1.01	16.40	100	.01	.00	.01	4.	1.02	16.50	245	.05	.04	.01	3138.
1.01	16.50	101	.01	.00	.01	4.	1.02	17.00	246	.05	.04	.01	3044.
1.01	17.00	102	.01	.00	.01	4.	1.02	17.10	247	.05	.04	.01	2898.
1.01	17.10	103	.01	.00	.01	4.	1.02	17.20	248	.05	.04	.01	2706.
1.01	17.20	104	.01	.00	.01	5.	1.02	17.30	249	.05	.04	.01	2479.
1.01	17.30	105	.01	.00	.01	5.	1.02	17.40	250	.05	.04	.01	2227.
1.01	17.40	106	.01	.00	.01	5.	1.02	17.50	251	.05	.04	.01	1988.
1.01	17.50	107	.01	.00	.01	5.	1.02	18.00	252	.05	.04	.01	1786.
1.01	18.00	108	.01	.00	.01	5.	1.02	18.10	253	.01	.01	.00	1614.
1.01	18.10	109	.01	.00	.01	5.	1.02	18.20	254	.01	.01	.00	1469.
1.01	18.20	110	.01	.00	.01	6.	1.02	18.30	255	.01	.01	.00	1337.
1.01	18.30	111	.01	.00	.01	6.	1.02	18.40	256	.01	.01	.00	1221.
1.01	18.40	112	.01	.00	.01	6.	1.02	18.50	257	.01	.01	.00	1114.
1.01	18.50	113	.01	.00	.01	7.	1.02	19.00	258	.01	.01	.00	1012.
1.01	19.00	114	.01	.00	.01	7.	1.02	19.10	259	.01	.01	.00	919.
1.01	19.10	115	.01	.00	.01	8.	1.02	19.20	260	.01	.01	.00	831.
1.01	19.20	116	.01	.00	.01	8.	1.02	19.30	261	.01	.01	.00	790.
1.01	19.30	117	.01	.00	.01	9.	1.02	19.40	262	.01	.01	.00	676.
1.01	19.40	118	.01	.00	.01	9.	1.02	19.50	263	.01	.01	.00	608.
1.01	19.50	119	.01	.00	.01	9.	1.02	20.00	264	.01	.01	.00	547.
1.01	20.00	120	.01	.00	.01	10.	1.02	20.10	265	.01	.01	.00	493.
1.01	20.10	121	.01	.00	.01	10.	1.02	20.20	266	.01	.01	.00	445.
1.01	20.20	122	.01	.00	.01	11.	1.02	20.30	267	.01	.01	.00	404.
1.01	20.30	123	.01	.00	.01	11.	1.02	20.40	268	.01	.01	.00	369.
1.01	20.40	124	.01	.00	.01	12.	1.02	20.50	269	.01	.01	.00	340.
1.01	20.50	125	.01	.00	.01	12.	1.02	21.00	270	.01	.01	.00	316.
1.01	21.00	126	.01	.00	.01	13.	1.02	21.10	271	.01	.01	.00	295.
1.01	21.10	127	.01	.00	.01	14.	1.02	21.20	272	.01	.01	.00	279.
1.01	21.20	128	.01	.00	.01	14.	1.02	21.30	273	.01	.01	.00	262.
1.01	21.30	129	.01	.00	.01	15.	1.02	21.40	274	.01	.01	.00	249.
1.01	21.40	130	.01	.00	.01	15.	1.02	21.50	275	.01	.01	.00	238.
1.01	21.50	131	.01	.00	.01	16.	1.02	22.00	276	.01	.01	.00	229.
1.01	22.00	132	.01	.00	.01	16.	1.02	22.10	277	.01	.01	.00	222.
1.01	22.10	133	.01	.00	.01	17.	1.02	22.20	278	.01	.01	.00	215.
1.01	22.20	134	.01	.00	.01	17.	1.02	22.30	279	.01	.01	.00	208.
1.01	22.30	135	.01	.00	.01	18.	1.02	22.40	280	.01	.01	.00	203.
1.01	22.40	136	.01	.00	.01	18.	1.02	22.50	281	.01	.01	.00	198.
1.01	22.50	137	.01	.00	.01	19.	1.02	23.00	282	.01	.01	.00	193.
1.01	23.00	138	.01	.00	.01	19.	1.02	23.10	283	.01	.01	.00	189.
1.01	23.10	139	.01	.00	.01	20.	1.02	23.20	284	.01	.01	.00	186.
1.01	23.20	140	.01	.00	.01	20.	1.02	23.30	285	.01	.01	.00	183.
1.01	23.30	141	.01	.00	.01	21.	1.02	23.40	286	.01	.01	.00	181.
1.01	23.40	142	.01	.00	.01	21.	1.02	23.50	287	.01	.01	.00	180.
1.01	23.50	143	.01	.00	.01	21.	1.03	0.00	288	.01	.01	.00	179.
1.02	0.00	144	.01	.00	.01	22.	1.03	.10	289	0.00	0.00	0.00	178.
1.02	.10	145	.01	.00	.01	22.	1.03	.20	290	0.00	0.00	0.00	177.
									SUM	8.88	4.98	3.90	71115.
										226.11	127.11	99.11	2013.751

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3143.	1527.	487.	245.	71050.

Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
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SUB-AREA RUNOFF COMPUTATION

TRIBUTARY INFLOW FLOOD HYDROGRAPH

	ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	INFLO2	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
0	2	1.00	0.00	1.00	1.00	0.000	0	0	0

PRECIP DATA

NP	STORM	DAJ	DAK
-288	0.00	0.00	0.00

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	-1.00	-67.00	0.00	.03

CURVE NO = -67.00 WETNESS = -1.00 EFFECT CN = 67.00

UNIT HYDROGRAPH DATA

TC= 0.00 LAG= .63

RECESSION DATA

STRTQ= -1.00 QRCSN= -.05 RTIOR= 5.00

UNIT HYDROGRAPH 21 END OF PERIOD ORDINATES, TC= 0.00 HOURS, LAG= .63 VOL= 1.00

88.	283.	555.	672.	642.	526.	355.	236.	164.	112.	76.
52.	35.	24.	17.	11.	8.	6.	4.	3.	2.	1.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.10	1	.01	.00	.01	1.	1.02	.20	146	.01	.00	.01	8.
1.01	.20	2	.01	.00	.01	1.	1.02	.30	147	.01	.00	.01	8.
1.01	.30	3	.01	.00	.01	1.	1.02	.40	148	.01	.00	.01	8.
1.01	.40	4	.01	.00	.01	1.	1.02	.50	149	.01	.00	.01	8.
1.01	.50	5	.01	.00	.01	1.	1.02	1.00	150	.01	.00	.01	10.
1.01	1.00	6	.01	.00	.01	1.	1.02	1.10	151	.01	.00	.01	10.
1.01	1.10	7	.01	.00	.01	1.	1.02	1.20	152	.01	.00	.01	10.
1.01	1.20	8	.01	.00	.01	1.	1.02	1.30	153	.01	.00	.01	11.
1.01	1.30	9	.01	.00	.01	1.	1.02	1.40	154	.01	.00	.01	11.
1.01	1.40	10	.01	.00	.01	1.	1.02	1.50	155	.01	.00	.01	11.
1.01	1.50	11	.01	.00	.01	1.	1.02	2.00	156	.01	.00	.01	12.
1.01	2.00	12	.01	.00	.01	1.	1.02	2.10	157	.01	.00	.01	12.
1.01	2.10	13	.01	.00	.01	1.	1.02	2.20	158	.01	.00	.01	12.
1.01	2.20	14	.01	.00	.01	1.	1.02	2.30	159	.01	.00	.01	12.
1.01	2.30	15	.01	.00	.01	1.	1.02	2.40	160	.01	.00	.01	13.
1.01	2.40	16	.01	.00	.01	1.	1.02	2.50	161	.01	.00	.01	13.
1.01	2.50	17	.01	.00	.01	1.	1.02	3.00	162	.01	.00	.01	13.
1.01	3.00	18	.01	.00	.01	1.	1.02	3.10	163	.01	.00	.01	13.
1.01	3.10	19	.01	.00	.01	1.	1.02	3.20	164	.01	.00	.01	13.
1.01	3.20	20	.01	.00	.01	1.	1.02	3.30	165	.01	.00	.01	14.
1.01	3.30	21	.01	.00	.01	1.	1.02	3.40	166	.01	.00	.01	14.
1.01	3.40	22	.01	.00	.01	1.	1.02	3.50	167	.01	.00	.01	14.
1.01	3.50	23	.01	.00	.01	1.	1.02	4.00	168	.01	.00	.01	14.
1.01	4.00	24	.01	.00	.01	1.	1.02	4.10	169	.01	.00	.01	14.
1.01	4.10	25	.01	.00	.01	1.	1.02	4.20	170	.01	.00	.01	15.
1.01	4.20	26	.01	.00	.01	1.	1.02	4.30	171	.01	.00	.01	15.

Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
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Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
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1.01	4.00	24	.01	.00	.01	1.	1.02	4.10	170	.01	.00	.01	15.
1.	4.10	25	.01	.00	.01	1.	1.02	4.20	170	.01	.00	.01	15.
1.	4.20	26	.01	.00	.01	1.	1.02	4.30	171	.01	.00	.01	15.
1.01	4.30	27	.01	.00	.01	1.	1.02	4.40	172	.01	.00	.01	15.
1.01	4.40	28	.01	.00	.01	1.	1.02	4.50	173	.01	.00	.01	15.
1.01	4.50	29	.01	.00	.01	1.	1.02	5.00	174	.01	.00	.01	15.
1.01	5.00	30	.01	.00	.01	1.	1.02	5.10	175	.01	.00	.01	16.
1.01	5.10	31	.01	.00	.01	1.	1.02	5.20	176	.01	.00	.01	16.
1.01	5.20	32	.01	.00	.01	1.	1.02	5.30	177	.01	.00	.01	16.
1.01	5.30	33	.01	.00	.01	1.	1.02	5.40	178	.01	.00	.01	16.
1.01	5.40	34	.01	.00	.01	1.	1.02	5.50	179	.01	.00	.01	16.
1.01	5.50	35	.01	.00	.01	1.	1.02	6.00	180	.01	.00	.01	16.
1.01	6.00	36	.01	.00	.01	1.	1.02	6.10	181	.03	.01	.02	17.
1.01	6.10	37	.01	.00	.01	1.	1.02	6.20	182	.03	.01	.02	19.
1.01	6.20	38	.01	.00	.01	1.	1.02	6.30	183	.03	.01	.02	21.
1.01	6.30	39	.01	.00	.01	1.	1.02	6.40	184	.03	.01	.02	25.
1.01	6.40	40	.01	.00	.01	1.	1.02	6.50	185	.03	.01	.02	28.
1.01	6.50	41	.01	.00	.01	1.	1.02	7.00	186	.03	.01	.02	31.
1.01	7.00	42	.01	.00	.01	1.	1.02	7.10	187	.03	.01	.02	33.
1.01	7.10	43	.01	.00	.01	1.	1.02	7.20	188	.03	.01	.02	35.
1.01	7.20	44	.01	.00	.01	1.	1.02	7.30	189	.03	.01	.02	36.
1.01	7.30	45	.01	.00	.01	1.	1.02	7.40	190	.03	.01	.02	37.
1.01	7.40	46	.01	.00	.01	1.	1.02	7.50	191	.03	.01	.02	38.
1.01	7.50	47	.01	.00	.01	1.	1.02	8.00	192	.03	.01	.02	39.
1.01	8.00	48	.01	.00	.01	1.	1.02	8.10	193	.03	.01	.02	40.
1.01	8.10	49	.01	.00	.01	1.	1.02	8.20	194	.03	.01	.02	40.
1.01	8.20	50	.01	.00	.01	1.	1.02	8.30	195	.03	.01	.02	41.
1.01	8.30	51	.01	.00	.01	1.	1.02	8.40	196	.03	.01	.02	42.
1.01	8.40	52	.01	.00	.01	1.	1.02	8.50	197	.03	.01	.02	42.
1.01	8.50	53	.01	.00	.01	1.	1.02	9.00	198	.03	.01	.02	43.
1.01	9.00	54	.01	.00	.01	1.	1.02	9.10	199	.03	.01	.02	44.
1.01	9.10	55	.01	.00	.01	1.	1.02	9.20	200	.03	.01	.02	44.
1.01	9.20	56	.01	.00	.01	1.	1.02	9.30	201	.03	.01	.02	45.
1.01	9.30	57	.01	.00	.01	1.	1.02	9.40	202	.03	.01	.02	45.
1.01	9.40	58	.01	.00	.01	1.	1.02	9.50	203	.03	.01	.02	46.
1.01	9.50	59	.01	.00	.01	1.	1.02	10.00	204	.03	.01	.02	46.
1.01	10.00	60	.01	.00	.01	1.	1.02	10.10	205	.03	.01	.02	47.
1.01	10.10	61	.01	.00	.01	1.	1.02	10.20	206	.03	.01	.02	47.
1.01	10.20	62	.01	.00	.01	1.	1.02	10.30	207	.03	.01	.02	48.
1.01	10.30	63	.01	.00	.01	1.	1.02	10.40	208	.03	.01	.01	48.
1.01	10.40	64	.01	.00	.01	1.	1.02	10.50	209	.03	.01	.01	49.
1.01	10.50	65	.01	.00	.01	1.	1.02	11.00	210	.03	.01	.01	50.
1.01	11.00	66	.01	.00	.01	1.	1.02	11.10	211	.03	.01	.01	50.
1.01	11.10	67	.01	.00	.01	1.	1.02	11.20	212	.03	.01	.01	50.
1.01	11.20	68	.01	.00	.01	1.	1.02	11.30	213	.03	.01	.01	51.
1.01	11.30	69	.01	.00	.01	1.	1.02	11.40	214	.03	.01	.01	51.
1.01	11.40	70	.01	.00	.01	1.	1.02	11.50	215	.03	.01	.01	52.
1.01	11.50	71	.01	.00	.01	1.	1.02	12.00	216	.03	.01	.01	52.
1.01	12.00	72	.01	.00	.01	1.	1.02	12.10	217	.05	.03	.02	54.
1.01	12.10	73	.01	.00	.01	1.	1.02	12.20	218	.05	.03	.02	58.
1.01	12.20	74	.01	.00	.01	1.	1.02	12.30	219	.05	.03	.02	64.
1.01	12.30	75	.01	.00	.01	1.	1.02	12.40	220	.05	.03	.02	72.
1.01	12.40	76	.01	.00	.01	1.	1.02	12.50	221	.05	.03	.02	80.
1.01	12.50	77	.01	.00	.01	1.	1.02	13.00	222	.05	.03	.02	87.
1.01	13.00	78	.01	.00	.01	1.	1.02	13.10	223	.05	.03	.02	92.
1.01	13.10	79	.01	.00	.01	1.	1.02	13.20	224	.05	.03	.02	96.
1.01	13.20	80	.01	.00	.01	1.	1.02	13.30	225	.05	.03	.02	99.
1.01	13.30	81	.01	.00	.01	1.	1.02	13.40	226	.07	.04	.03	102.
1.01	13.40	82	.01	.00	.01	1.	1.02	13.50	227	.07	.04	.03	107.
1.01	13.50	83	.01	.00	.01	1.	1.02	14.00	228	.07	.04	.03	114.
1.01	14.00	84	.01	.00	.01	1.	1.02	14.10	229	.12	.07	.05	125.
1.01	14.10	85	.01	.00	.01	1.	1.02	14.20	230	.12	.07	.05	142.
1.01	14.20	86	.01	.00	.01	1.	1.02	14.30	231	.12	.07	.05	166.
1.01	14.30	87	.01	.00	.01	1.	1.02	14.40	232	.20	.10	.10	202.
1.01	14.40	88	.01	.00	.01	1.	1.02	14.50	233	.20	.10	.10	257.
1.01	14.50	89	.01	.00	.01	1.	1.02	15.00	234	.65	.45	.20	368.

Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
B22

1.01	14.10	85	.01	.00	.01	1.	1.02	14.20	230	.12	.07	.05	142.
1.01	14.20	86	.01	.00	.01	1.	1.02	14.30	231	.12	.07	.05	166.
1.01	14.30	87	.01	.00	.01	1.	1.02	14.40	232	.28	.18	.10	202.
1.01	14.40	88	.01	.00	.01	1.	1.02	14.50	233	.28	.19	.10	257.
1.01	14.50	89	.01	.00	.01	1.	1.02	15.00	234	.65	.45	.20	361.
1.01	15.00	90	.01	.00	.01	1.	1.02	15.10	235	1.36	1.02	.34	575.
1.01	15.10	91	.01	.00	.01	1.	1.02	15.20	236	.43	.32	.11	922.
1.01	15.20	92	.01	.00	.01	1.	1.02	15.30	237	.28	.23	.05	1287.
1.01	15.30	93	.01	.00	.01	1.	1.02	15.40	238	.12	.10	.02	1487.
1.01	15.40	94	.01	.00	.01	1.	1.02	15.50	239	.12	.10	.02	1475.
1.01	15.50	95	.01	.00	.01	1.	1.02	16.00	240	.12	.10	.02	1303.
1.01	16.00	96	.01	.00	.01	1.	1.02	16.10	241	.07	.06	.01	1051.
1.01	16.10	97	.01	.00	.01	1.	1.02	16.20	242	.07	.06	.01	829.
1.01	16.20	98	.01	.00	.01	1.	1.02	16.30	243	.07	.06	.01	657.
1.01	16.30	99	.01	.00	.01	1.	1.02	16.40	244	.05	.04	.01	527.
1.01	16.40	100	.01	.00	.01	1.	1.02	16.50	245	.05	.04	.01	427.
1.01	16.50	101	.01	.00	.01	1.	1.02	17.00	246	.05	.04	.01	350.
1.01	17.00	102	.01	.00	.01	1.	1.02	17.10	247	.05	.04	.01	293.
1.01	17.10	103	.01	.00	.01	1.	1.02	17.20	248	.05	.04	.01	253.
1.01	17.20	104	.01	.00	.01	1.	1.02	17.30	249	.05	.04	.01	224.
1.01	17.30	105	.01	.00	.01	1.	1.02	17.40	250	.05	.04	.01	204.
1.01	17.40	106	.01	.00	.01	2.	1.02	17.50	251	.05	.04	.01	191.
1.01	17.50	107	.01	.00	.01	2.	1.02	18.00	252	.05	.04	.01	182.
1.01	18.00	108	.01	.00	.01	2.	1.02	18.10	253	.01	.01	.00	173.
1.01	18.10	109	.01	.00	.01	2.	1.02	18.20	254	.01	.01	.00	160.
1.01	18.20	110	.01	.00	.01	2.	1.02	18.30	255	.01	.01	.00	139.
1.01	18.30	111	.01	.00	.01	2.	1.02	18.40	256	.01	.01	.00	117.
1.01	18.40	112	.01	.00	.01	2.	1.02	18.50	257	.01	.01	.00	96.
1.01	18.50	113	.01	.00	.01	3.	1.02	19.00	258	.01	.01	.00	80.
1.01	19.00	114	.01	.00	.01	3.	1.02	19.10	259	.01	.01	.00	69.
1.01	19.10	115	.01	.00	.01	3.	1.02	19.20	260	.01	.01	.00	61.
1.01	19.20	116	.01	.00	.01	3.	1.02	19.30	261	.01	.01	.00	56.
1.01	19.30	117	.01	.00	.01	3.	1.02	19.40	262	.01	.01	.00	53.
1.01	19.40	118	.01	.00	.01	3.	1.02	19.50	263	.01	.01	.00	51.
1.01	19.50	119	.01	.00	.01	3.	1.02	20.00	264	.01	.01	.00	49.
1.01	20.00	120	.01	.00	.01	4.	1.02	20.10	265	.01	.01	.00	48.
1.01	20.10	121	.01	.00	.01	4.	1.02	20.20	266	.01	.01	.00	47.
1.01	20.20	122	.01	.00	.01	4.	1.02	20.30	267	.01	.01	.00	47.
1.01	20.30	123	.01	.00	.01	4.	1.02	20.40	268	.01	.01	.00	47.
1.01	20.40	124	.01	.00	.01	4.	1.02	20.50	269	.01	.01	.00	46.
1.01	20.50	125	.01	.00	.01	4.	1.02	21.00	270	.01	.01	.00	46.
1.01	21.00	126	.01	.00	.01	4.	1.02	21.10	271	.01	.01	.00	46.
1.01	21.10	127	.01	.00	.01	4.	1.02	21.20	272	.01	.01	.00	46.
1.01	21.20	128	.01	.00	.01	5.	1.02	21.30	273	.01	.01	.00	46.
1.01	21.30	129	.01	.00	.01	5.	1.02	21.40	274	.01	.01	.00	46.
1.01	21.40	130	.01	.00	.01	5.	1.02	21.50	275	.01	.01	.00	46.
1.01	21.50	131	.01	.00	.01	5.	1.02	22.00	276	.01	.01	.00	46.
1.01	22.00	132	.01	.00	.01	5.	1.02	22.10	277	.01	.01	.00	46.
1.01	22.10	133	.01	.00	.01	5.	1.02	22.20	278	.01	.01	.00	46.
1.01	22.20	134	.01	.00	.01	5.	1.02	22.30	279	.01	.01	.00	46.
1.01	22.30	135	.01	.00	.01	6.	1.02	22.40	280	.01	.01	.00	46.
1.01	22.40	136	.01	.00	.01	6.	1.02	22.50	281	.01	.01	.00	46.
1.01	22.50	137	.01	.00	.01	6.	1.02	23.00	282	.01	.01	.00	46.
1.01	23.00	138	.01	.00	.01	6.	1.02	23.10	283	.01	.01	.00	46.
1.01	23.10	139	.01	.00	.01	6.	1.02	23.20	284	.01	.01	.00	46.
1.01	23.20	140	.01	.00	.01	6.	1.02	23.30	285	.01	.01	.00	46.
1.01	23.30	141	.01	.00	.01	6.	1.02	23.40	286	.01	.01	.00	46.
1.01	23.40	142	.01	.00	.01	6.	1.02	23.50	287	.01	.01	.00	46.
1.01	23.50	143	.01	.00	.01	7.	1.03	0.00	288	.01	.01	.00	46.
1.02	0.00	144	.01	.00	.01	7.	1.03	.10	289	0.00	0.00	0.00	45.
1.02	.10	145	.01	.00	.01	7.	1.03	.20	290	0.00	0.00	0.00	45.
									SUM	8.84	4.95	3.89	19001.
										(224.1(	126.1(	99.1(	538.05)

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES(SQUARE KILOMETERS)

		PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
HYDROGRAPH AT	INFLO1	3143.	1527.	487.	245.	3.78
		(88.99)(	43.23)(	13.78)(	6.94)(	9.79)
HYDROGRAPH AT	INFLO2	1487.	413.	130.	66.	1.00
		(42.10)(	11.69)(	3.68)(	1.86)(	2.59)
2-COMBINED	INFLOW	3725.	1926.	617.	311.	4.78
		(105.48)(	54.55)(	17.46)(	8.79)(	12.38)
ROUTED TO	DAM	1715.	1351.	439.	219.	4.78
		(48.57)(	38.25)(	12.43)(	6.20)(	12.38)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	744.70	744.70	752.30
STORAGE	1220.	1220.	1923.
OUTFLOW	0.	0.	1881.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.00	751.95	0.00	1885.	1715.	0.00	42.17	0.00

Output Summary
1% Probability Event
Goose Creek Lake Dam
MO 30297
B23


DATE
ILME